FREE X-BAR THEORY
AND BARRIERS TO MOVEMENT AND GOVERNMENT

By

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A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1988

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Nació
la palabra en la sangre,
creció en el cuerpo oscuro, palpitando,
y voló con los labios y la boca.

...

Y así la herencia es ésta:
éste es el aire que nos comunica
con el hombre enterrado y con la aurora
de nuevos seres que aún no amanecieron.

...

From "La Palabra"
by Pablo Neruda

"The word
was born in the blood,
it swelled in the dark body, palpitating,
and flew through the lips and the mouth.
...
"And so the inheritance is this:
this is the breath that gives us communion
with humans interred and with the dawning
of new beings who have yet to break the day.
..."

ACKNOWLEDGMENTS

It seems appropriate to acknowledge first those people who helped awaken and encourage my interest in linguistic theory and other things things of beauty. For their independent study courses in philosophy and languages, I am grateful to Harry Pemberton, Westbrook Barritt, Howard Taylor, and Roderic Owen, who was also my advisor at Mary Baldwin. Very special thanks are due to Mario Pellicciaro, who directed my academic work, and who taught me "how" to read Chomsky. Because of his excellent training, I came to graduate school with an essential grasp of Chomsky's leading ideas, as well as a fairly solid background in earlier linguistic traditions. I have relied on and rediscovered this experience ever since.

My work at the University of Florida has been unconditionally supported and encouraged by Gary Miller and Jean Casagrande. I learned a tremendous amount during my research assistantships with them--thanks also to the Division of Sponsored Research at the University of Florida for funding these positions.

It is largely due to Gary and Jean that I have had the opportunity to teach Chomskyan linguistics, and this experience has proved invaluable. I am also indebted to the entire faculty in linguistics here in this regard, and to my many students, who have also been my teachers, of course.

The writing I have done with Gary has taught me a lot about professionalism, thoroughness, and many of the difficulties a theory must confront to deal with a broad range of data. I am also grateful to him for making me interested in theoretical issues in morphology and phonology again, for many hours of discussion which have done much to influence my work here, and in general for the countless things he has done with my best interests at heart.

Jean's encouragement and advice has been extremely helpful over the years. I thank him for first encouraging me to pursue my interests in Chomsky's work and for then doing everything in his power to make this pursuit feasible.

Special thanks go to David Lightfoot for his interest in my work, for coming to Gainesville to help preside over the interrogation ceremonies, especially for his great quals questions, and generally for taking time out of a very busy life to come to my aid.

I feel very fortunate to have had the opportunity to work with Denis Bouchard this year. Many thanks go to him for being interested in helping me find my own theory, for not shutting me out when my early attempts to express the embryonic ideas of the thesis were hardly coherent, for his careful, critical reading, and for his many contributions along the way.

I also thank Robert Scholes for inspiring and encouraging my interest in neurolinguistics and functional categories, and Ira Fischler, for his time and help as the outside member on my committee. There are a number of other faculty members I would like to thank for time, help, and fun conversations: David Birdsong, Chauncy Chu, Jerry Scott, Bill Sullivan, Roger Thompson, Tim Vance, and Ann Wyatt-Brown.

Finally, a number of people on our staff at one time or another have been of great help to me: Dian Leahy, Pat Tucker, and especially Dolores Collier.

Many linguists have been kind enough to send their work to me, offer advice, discuss theoretical points, etc. I am especially grateful to Noam Chomsky for his encouragement and correspondence over the last few years. His reading suggestions led me to the specific topic of this dissertation, not to mention the monumental influence his thinking has had on my life in linguistics and politics. I also thank Steven Abney, Richard Sproat, Nigel Fabb, Tim Stowell, Lisa Travis, Ed Battistella, Frits Stuurman, Alec Marantz, Ray Jackendoff, Brian Joseph, Elisabet Engdahl, Yehuda Falk, Naoki Fukui, Margaret Speas, and Mark Baker.

Thanks to my fellow students who've helped me in one way or another to stay sane: David Bogdan, David Johns, Bruce Hamilton, Graziella Saccon (who also talked about Italian with me), Danny Oby, Elizabeth Branham, Michelle Moulther, Brenda Willis, Molly Daniels, Anas Abu-Mansour, Mahasen Abu-Mansour, and Nelleke van Deusen-Scholl.

I am grateful to Barry Gilmore, Resa Hayes, Suvarna Shah, and Brian for helping me with what turned out to be

not-so-difficult computer problems (and I would like to acknowledge computer and printer manuals for driving me nuts). For invaluable help taking care of my son, Mark, I thank Gary, Lora, and Kim. Thanks to everyone in the Program, by the way, for being tolerant and supportive of my trying to work and take care of a baby at the same time. Friends to whom I am especially grateful include Marcelle, Kim, Catherine, Lou, Roy, Marshall, Danny, Linda, Brenda, Judy, Phil, Scott, Bruce, Timothy, Michael, Chip, Kenny, and Mark.

Finally, I thank all my family, especially my parents, Neta Tipton and Barry Gilmore and, my late step-father, Jim Tipton, my in-laws, Claude and Virginia Leffel, my son Mark, and my husband Spencer. Special mention is also due to Aaron Gilmore, Margaret Ward, Alma Saetre, Chip Gilmore, Clay Gilmore, Darla Gilmore, and Gina Gilmore. This work is dedicated to Spencer, Mark, and Mom.

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Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

FREE X-BAR THEORY AND BARRIERS TO MOVEMENT AND GOVERNMENT

By

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August, 1988

Chair: D. Gary Miller
Major Deparment: Linguistics

This work combines an adjunctionless theory of barriers with "free X-bar theory," extended to all categories, such that lexical phrases (LPs) are complements in nonlexical phrases (FPs), and to all levels of representation. Projections are potentially infinite, progressively bar-numbered, and binary-branching.

The lexical/nonlexical distinction is crucial for theta-theory and movement theory. Empty categories at D-structure, are possible only in heads and SPECs of FP. Since the maximal projection is not stipulated, empty SPECs must otherwise "licensed." These empty SPECs facilitate wh-movement, providing landing sites for extraction which avoids bounding and government violations.

The principle that only one LP can be crossed in each application of "move alpha" is proposed to be central to bounding theory. An FP assigned "theta-content" as argument or modifier (CFP) serves as another kind of barrier. Italian-languages may skip one (argument) CFP but not two, whereas "standard English" cannot skip even one (the "S/S-bar parameter").

Phrases are "bridged" if they have an empty position used to cross them; otherwise extracted from, they are "skipped." A phrase is bridgeable if it has an empty position at D-structure.

Skipping a CFP in itself causes no strong violation, which arises only if the skipping of additional barriers results.

Head positions can hold zero-level categories or more complicated phrases (any phrase, as "free X-bar theory" predicts), when a head is "licensed" as a maximal projection. Subjects are proposed to receive theta-roles in or from head positions, and "specific" phrases, to have filled SPECs, at D-structure. Then, DP-movement is "head-movement," wh-movement is "SPEC-movement," and "specificness" blocks wh-movement bridging.

The assignment of features of "modality" to the SPEC or head of a complement is proposed to underlie the core notion of "L-marking." If no overt SPEC is present to receive such a feature, the assignment licenses an empty position at D-strucutre, open for proper movement.

CHAPTER 1
INTRODUCTION:
THE PRINCIPLES AND PARAMETERS APPROACH

1.1 Principles, Parameters, Modules, and Unification

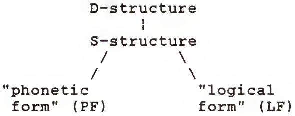
This study attempts to integrate current hypotheses regarding the nature and scope of principles of so-called "X-bar theory," which provides the basic schema for the structure of phrases, with those concerning the theory of "domains" relevant for movement and/or government.

The framework for this study is commonly known as "government-binding theory" ("GB theory"), lucidly discussed in Chomsky (1981a, 1987a, 1987b) and elsewhere as "the principles and parameters approach," represented in early work as the "(Revised) Extended Standard Theory," e.g. Chomsky (1975), (1977a), (1977b), (1980a), (1980b), and (1981a); culminating (temporarily) with core "government-binding theory" (Chomsky, 1981b, 1982); and continuing with with Chomsky (1986a), (1986b), etc.

We will attempt a brief introduction to this framework, highlighting aspects most relevant to our thesis, which will also be made more comprehensible in this chapter in rather broad terms.

A central idea unifying this work is that the levels of representation which constitute a given "linguistic structure" are organized as in (1).

(1)



D-structure is the "pure" representation supplying the grammatical relations on which basis semantic functions such as "theta-roles" ("agent," "patient," "instrument") are determined. The simple rule "move alpha" may change the position of a given element so that it seems to have a different grammatical relation at S-structure from the one through which it receives a theta-role.

(2) a. (x) killed John
    b. John was killed

In such situations, the S-structure representation is equipped to indicate not only the "superficial" grammatical relation of John in (2b) but also its "original," D-structure position, represented in (2a), in which it receives a theta-role, since movement leaves "trace." That is, the S-structure representation for (2b) is (3).

(3) John was killed t

Basically, when a phrase moves from a position, the position remains "behind," so that the "semantic function" of the phrase can be recovered. S-structure is thus claimed to be the level of representation directly relevant to both LF and PF interpretive rules.

A given S-structure representation is semantically interpreted, to a certain extent, by rules which give rise to the LF representation, which is itself associated with and interpreted in terms of nonlinguistic knowledge (e.g. "the conceptual system," "knowledge of the world," "principles of language use," etc.; see Chomsky, 1975, 1977a, 1980b, 1986a, 1987b). The S-structure representation is also interpreted by PF rules to give a "phonetic form," which is presumably then further associated with knowledge of sound in general, principles which may relate knowledge of sound to knowledge of the world in general, etc. Core linguistic knowledge, then, is said to provide a system of representations by which linguistic meaning is associated with linguistic form.

While this view of the organization of linguistic representation has remained relatively stable since it was proposed by Chomsky in the early 1970's, the notions regarding what gives rise to the representations has changed. The general conception of what linguistic knowledge is has moved away from a set of subsystems of complex rules and towards a set of subsystems of innate principles and experientially triggered parameters (cf. Chomsky, 1981a, 1987b; Lightfoot, 1982).

Because the principles interact, a parameter set in a particular way has various, wide-ranging consequences, accounting for typological variability. For example, it is thought that bounding theory restricts movement to a certain type of structural domain, but the work of Rizzi (1978, 1982) suggests that the relevant domain is defined somewhat differently in Italian from the way it is in ("standard") English. If, as "Barriers theory" (Chomsky, 1986b) claims, bounding nodes are also barriers to government, the typological difference might be expected to manifest itself in various Case and binding phenomena, for example. In general, typological observations made at a superficial level are the end results of a number of interacting properties of given languages and language itself, from the particular formation of lexicons and setting of parameters to the abstract principles (which constitute "Universal Grammar," or UG) which all languages are thought to observe.

Linguistic knowledge in particular, as well as knowledge in general, is said to be "modular," i.e. composed of separate but interacting (sub)types ("modules") of knowledge, subsystems within which innate and acquired "information" are "coupled" in terms of principles and parameters. A theory working within the principles and parameters framework makes specific claims concerning the nature of the subsystems of linguistic knowledge and the manner of their interaction, to account for a relatively broad range of phenomena perceived to exhibit relevant properties.

Subsystems of principles discussed in Chomsky (1981b) ("GB theory") include government theory, theta-theory, bounding theory, Case theory, binding theory, and control theory (Chomsky, 1981b:5). Government is thought to be a "central" relation, in that it seems to be relevant for principles in various subsystems.

Perhaps the most intuitively obvious "influence" the concept of "government" accounts for is that of a head over its dependents ("sisters") within a phrase. It is possible for heads to govern nonsister elements, however, (i.e. elements which are not immediate constituents of the phrase in question), at least under certain circumstances. Government theory must determine the realm of influence within which the relation of government can operate. The definition of government crucially relies on the concepts provided by "X-bar theory," which determines the basic composition of syntactic structures, and on the definitions of other relations, e.g. "dominate" and "command."

Government is conceived as a unifying relation in that it is relevant to a number of "modules" (subsystems of linguistic knowledge). Thus, Case (e.g. "nominative/ subjective," "accusative/objective," etc.) is assigned under government, as are "theta-roles." A central hypothesis of Chomsky (1981b) is that government is relevant for determining the domain within which "anaphors" (reflexives, reciprocals, traces of "NP-movement"--e.g. passive and raising-to-subject) must be bound (coindexed with some element), and within which pronominals (e.g. pronouns) must be free (indexed differently from any other element).

A major (and controversial) claim of the theory of control presented in Chomsky (1981b) is that PRO (a phonologically empty pronominal element, inserted at D-structure) cannot be subject to the binding theory. It is argued that PRO has both anaphoric and pronominal properties, and that within a domain relevant for binding PRO must be both bound and free, a contradiction. Therefore, PRO cannot be found in positions for which a binding domain can be defined, i.e. it can only appear in ungoverned positions. In this sense, government theory indirectly interacts with the theory of PRO (control theory).

Traces (nonpronominal empty positions--with categorial features--which are left when an element moves) must be "properly governed," governed in a "special" manner. In "GB theory" traces are thought to be required to be governed by a lexical category, but the definition of "proper government" has been altered in later work, as we shall see. In any case, it is clear that government is thought to be a relation relevant to a number of subsystems of principles. "GB theory" will be discussed more fully in (1.3).

Chomsky (1986b) attempts to show that government is in some way relevant to bounding theory (the theory of how any given movement must operate within a certain structural domain), through the concept of "barrier." Generally speaking, a barrier to government is claimed to be a "weak barrier" to movement. Two "weak barriers" encountered during a given application of "move alpha" are sufficient to block the movement altogether. The basic hypotheses of this theory will be outlined in (2.2).

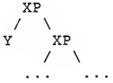
Barriers theory assembles a set of principles in certain novel ways, within the principles and parameters approach, including certain hypotheses concerning the scope of X-bar theory and the effect of its scope in helping to determine how movement rules work.

The distinction between the structures "clause" (S) and "embedded clause" (S' = complementizer + S) was traditionally thought to be one of projection; S and S' were seen as different projections of the same category. This in turn played a role in shaping the view of how movement operated. Movement to the subject of a clause (e.g. as in passive constructions) was seen as movement to an immediate constituent of S. (Given the structure of S (= NP (INFL) VP) not much more than that could be said.) Movement "to COMP" was viewed as some type of "adjunction."

In Barriers theory, the difference between "clause" and "embedded clause" is proposed to be categorial; S is IP, a phrase projected from INFL ("mood operator," to be discussed below), and S' is CP (a projection of the complementizer). This makes it possible to view the subject of a clause and a question word (wh-expression) which has been moved to "the front of a clause," as occupying parallel positions, the SPECs of IP and CP, respectively. Extending X-bar theory to the "nonlexical categories" INFL and COMP thus gives us a different conception of the structures involved in movement.

Barriers theory restricts the direct influence of X-bar theory to D-structure, S-structure being allowed to depart in some respects from the basic X-bar principles. Under this conception, certain phrases can be adjoined to during movement (4).[1]

(4)



Such adjunction is constrained by theta-theory, it is claimed (also apparently unnecessary if no "barrier" is being crossed). A unique sort of landing site is provided by adjunction, a position "on the outskirts" of the phrase, not exactly "inside" the phrase, but not exactly "outside" of it, either.

The peculiarities of the position are derived from the notion that adjunction fragments ("segments") a phrase during movement, into (at least) two parts,[2] one of which includes the other, so that the adjoined element occupies a position included by the more inclusive part of the phrase, but not by the other part. In other words, in (4) the phrase XP does not dominate Y since XP* does not dominate Y; only the XP# segment of the phrase does.[3]

Since adjunction during movement breaks up a phrase, X-bar theory does not hold at S-structure, according to Barriers theory. The relevance of X-bar theory for various levels of representation determines the types of positions which are available as "landing sites" for movement.

The work in this dissertation represents another attempt to discern the possible consequences of a particular version of X-bar theory for what constitutes "proper movement." We will suggest, however, that X-bar theory holds at S-structure, and that the generalization of X-bar theory to all categories sufficiently provides landing sites for "proper movement," so that adjunction during movement is unnecessary.

1.2 Standard X-bar Theory, Clausal Structures, and the Syntactic Relevance of INFL

X-bar theory was first proposed by Chomsky (1970) to account for parallelisms perceived in the structure of various types of phrases, lending support to the hypothesis that the structure of "nominalizations" (e.g. the city's destruction), could be accounted for by basic, general principles of phrase structure instead of by powerful transformational rules which "converted" clauses "into" noun phrases (e.g. Lees, 1960; Rosenbaum, 1967).

Standard X-bar theory (Chomsky, 1970, 1981b, etc.) is claimed to hold at least of NP ("noun phrase"), VP ("verb phrase") and AP ("adjective phrase"). Jackendoff (1977), van Riemsdijk (1978), and others have included PP.[4] Standard X-bar theory provides the schema in (5).

(5) a. X" --> ... X' ...

b. X' --> ... X ...

A phrase is "endocentric," in that it is a "projection" of its head. A phrase of a given kind, say NP in (6a), must have a head of the same kind, here N. NP is said to be the "maximal projection" of N. A phrase is the maximal projection of its head, and all projections have the same syntactic category features. In standard X-bar theory, the maximal projection is "two," i.e. a head projects to X' and X", so that X" = XP (6b).

```
(6)     a.    NP                  b.     X"
             ...                        / \
              |                            X'
              |                           / \
             ...                        X
```

Various proposals have been presented that the maximal projection is lower or higher than two (e.g. Jackendoff, 1977; van Riemsdijk, 1978; Farmer, 1984; Stuurman, 1985).

The schema represented in (5) and (6b) observes the practice of "progressive bar-numbering" (cf. Jackendoff, 1977; van Riemsdijk, 1978; Pullum, 1985). However, a number of proposals concerning adjunction have been consistently put forth (Baker, 1978; Hornstein and Lightfoot, 1981; Lightfoot, 1982; Stowell, 1981, 1983; May, 1979; Chomsky, 1986b).

In Barriers theory, adjunction in the base relaxes the progressive bar-numbering convention, but preserves endocentricity, while adjunction at S-structure (in the course of "move alpha") observes neither; it breaks up a phrase into "segments," as described above. Such a theory leads us to ask which aspects of X-bar theory are relevant at the various (non-D-structure) levels of representation. Thus, the explicitness of the (May, 1979; Chomsky, 1986b) view of adjunction (at LF and S-structure, respectively) clarifies this question: Does UG provide some principle, or "conspiracy of principles," to indicate why X-bar theory should be relevant at some levels of representation and not others--or is such an indication unnecessary, i.e. does X-bar theory hold "freely," at all levels? This is one respect in which the "scope" of X-bar theory is to be questioned.

Another issue relevant to the scope of X-bar theory is the status of the syntactic structures which are not NP, VP, or AP. Once X-bar theory is extended beyond these three categories (termed "lexical" by Chomsky), it seems difficult to prevent it from being extended to all categories. Thus, extending core X-bar theory to PP opens the possibility that other categories which are [-N, -V] fall under the theory as well. Questions arise with respect to not only clausal structures (traditionally labeled S and S'), but also other "functional" elements, such as determiners and auxiliaries.

Of course, a central question for the theory of linguistic structure, in any case, is the nature of the clause. The trees in (7) indicate only some of the alternative conceptualizations of "clause" and "embedded clause," (7d) being the analysis of Chomsky (1986b), adopted here (COMP = complementizer). The "subject of a clause" is indicated with "#," and the "object of the verb" is marked with "*" in (7); these grammatical relations are defined in terms of the particular structural relations involved (see (2.2)).

```
(7)  a.     S'                 b.    S'
          /  \                     /  \
       COMP   S                COMP    S
             / \                     / ¦ \
           NP#  VP                NP# INFL VP
               /  \                         / \
              V    NP*                    V    NP*

     c.     IP                 d.     CP
           /  \                     /  \
         COMP  I"                 (wh)  C'
              /  \                     /  \
           NP#    I'              C(OMP)   I(nfl)P
                 /  \                     /  \
                I    VP                 NP#   I'
                    /  \                     /  \
                   V    NP*                 I    VP
                                                /  \
                                               V    NP*
```

The "mood indicator" INFL is distinguished syntactically from the auxiliary (Aux/Ax) or verb to which it may be attached. INFL includes the "pastness" of forms such as _walked_, _had walked_, _was walking_, etc., "nonpast morphemes" such as _-s_ and _-0_ (as in _walks_, _have walked_, etc.), modals such as _may_, _can_, _could_, etc., and nonfinite elements, e.g. _to_ in _to walk_ and _-ing_ in _walking_. This element has come to be viewed as an independent, syntactically relevant entity, in spite of its rather frequent morphological dependency, because of various independent considerations, which we attempt to draw together here.

Basically, the notion "tensed clause" continually showed itself to be relevant to various aspects of syntax. For example, it had been noted that various COMPs in English such as that and for must cooccur with (what later came to be called) certain kinds of INFL (a "finite" INFL in the first case, infinitival to in the second); cf. Bresnan (1970).

Chomsky's work on the "Tensed S Condition" (e.g. Chosmky, 1973) indicated that the finiteness of a clause was syntactically relevant for the interpretation of "anaphors," pronominals, etc. In more current terms (Chomsky, 1981b), the presence of AGR ("subject-verb agreement") in INFL plays an important role in determining the "domain" relevant for binding theory.

The presence of AGR also affects the assignment of Case to the subject (e.g. licensing the assignment of "nominative" Case in English); cf. Vergnaud, 1974; Chomsky, 1980a, 1981b). Further, AGR in INFL bars the presence of PRO in subject position, at least in "non-pro-drop languages" such as English (cf. Perlmutter, 1971; Chomsky and Lasnik, 1977; Chomsky, 1981b).

This evidence could be added to earlier arguments (e.g. Ross, 1967) that "mood indicators" have some "semantic scope" over the entire clause. They also have unique distributional properties, setting INFL apart from auxiliaries and verbs, and giving rise to a number of proposals including Chomsky's "Aux-hopping" (cf. Chomsky, 1957), "have-be raising" (e.g. Emonds, 1970; Jackendoff, 1972, 1977), and current notions of "V-raising" (Rizzi, 1982; Chomsky, 1986b).

Aside from this, as we mentioned earlier, there is the question of the status of "clause" with respect to X-bar theory. The general trend has been to move away from an exocentric view of the clause (as "headless," or perhaps two- or three-headed) towards an endocentric one, i.e. to generalize X-bar theory to "clause" just as it had earlier been extended to "embedded clause" (with S' of the same category as, and presumably a projection of, S). However, for linguists who have not found evidence for the syntactic relevance of INFL sufficient to argue that INFL is the head of S, V itself is viewed as the head of S (e.g. Emonds, 1976, 1985; Jackendoff, 1977; van Riemsdijk, 1978; Kayne, 1984; Bouchard, 1984). A significant consequence of this view of the clause as the maximal projection of V is that the grammatical relation "Predicate Phrase" is no longer perceived to be a maximal projection, predicted to be patterned with the intermediate N-one-bar blue book in the noun phrase the blue book. Chomsky (1986b) has suggested that in some languages clauses could be I-headed while in others they might be headed by V.

As we will discuss further in Chapter Two, the analysis we will explore in this work involves the generalization of X-bar theory to all categories, including INFL (I) and COMP (C) (following Chomsky, 1986b) as well as Aux, Det/D ("determiner"), and Dg (Deg/degree word) (following Abney, 1987). In particular we will attempt to show how a theory "barriers" to movement and government might work given such a generalization of X-bar theory.

Our introduction continues with a brief sketch of the theory presented in Chomsky (1981b), (1982), commonly known as "GB theory." The major hypotheses which will be relevant to the development of our theory will be stated; for further explanation at a more introductory level, see van Riemsdijk and Williams (1986), Leffel (1987), Chomsky (1988), for example. Readers already familiar with GB theory may wish to skip to the overview in (1.4).

1.3 "Government-binding Theory"

As we have pointed out, X-bar theory provides for basic syntactic structure, i.e. at least for the form of D-structures. Coupled with the notion of "projection," developed in "theta-theory" (see below), it serves to eliminate the major functions of the phrase structure rules (the "categorial component") of earlier theories based on Chomsky (1965).

(8) X' --> ... X ... (X = [+N, ±V] or [+V, ±N])
(Chomsky, 1981b:48)

The X-bar principle (8) is termed "[t]he basic rule for lexical categories," i.e. N, A, and V. The feature system is as that in Chomsky (1970); N ("noun:") is [+N, -V], V ("verb") is [+V, -N], A ("adjective"/"adverb") is [+N, +V], and P ("adposition") is [-N, -V]. For Chomsky (1981b), the "lexical categories" are those which are [+X] ([+N] and/or [+V]).

The lexicon is viewed as a repository for idiosyncratic information, basically as in the "Standard Theory" of Chomsky (1965). A "lexical item" is a set of representations in itself, said to consist of a phonological representation associated with a semantic representation (of some kind) and syntactic categorial features (e.g. [±N], [±V]). In addition, certain lexical items might be marked with features indicating whether the presence of certain complements is required (e.g. by "transitive verbs"); here the lexical item is said to be associated with features of "subcategorization," or a "subcategorization frame" (9).

(9) [-- NP S']
(e.g. persuade, tell, etc.)

Elements which are subcategorized for ("complements") receive "theta-roles," such as "patient," "goal," etc.-- concepts central to "theta-theory." Complement positions are thus always "theta-positions," while subjects may or may not receive theta-roles, a possibility left open since subjects are not subcategorized for. A subject position can thus be either a "theta-position" or a "non-theta-position."

An important principle of theta-theory is the "Projection Principle," stated loosely by Chomsky (1981b:29) as (10).

(10) "Representations at each syntactic level (i.e., LF and D- and S-structure) are projected from the lexicon, in that they observe the subcategorization properties of lexical items."

It is true by definition that subcategorization properties are observed at LF and in the lexicon; the Projection Principle crucially holds that they are also observed at D-structure and S-structure. Phrase structure rules no longer have to spell out which D-structures are grammatical phrases, as long as a given phrase satisfies the Projection Principle and X-bar theory.

The "Theta-criterion" is introduced as "a criterion of adequacy for LF" (p. 36).

(11) "Each argument bears one and only one [theta]-role, and each [theta]-role is assigned to one and only one argument."

The Projection Principle is stated so that this criterion of "biuniqueness" of theta-roles and arguments (or argument "chains") holds at each syntactic level.

(12) Projection Principle: The Theta-criterion holds at D-structure, S-structure, and LF.

The "theta-position" mediates the association between theta-role and argument: "An argument is assigned a [theta]-role by virtue of the [theta]-position that it or its trace occupies at LF" (p. 36).

(13) A theta-marks B if A and B are immediate constituents of some phrase X, if B is "a position for which [A] determines a [theta]-role" (p. 37).

In (13), A theta-marks the position occupied by B, and any category which occupies that position or which is associated with a trace that occupies that position. Subcategorization is said to entail theta-marking, and any position which is theta-marked is a theta-position. The subject of a clause is claimed to be assigned a theta-role by VP, by "indirect theta-marking" (p. 38).

"A-positions" are defined as positions which are theta-markable, (p. 47), even though they may not have to be theta-marked particular instances. Both subject and object positions are "A-positions," since they are theta-markable. Complements are also always theta-marked, so they are always theta-positions. A subject may or may not be a theta-position, but it is always potentially theta-markable. Adjuncts (with wh-movement being viewed as "adjunction to COMP") are non-A-positions. The basic grammatical relations are defined in terms of structural relations (47f).[5]

(14) a. subject = [NP, S] or [NP, NP]
b. (direct) object = [NP, X']

A distinction between NP-movement and wh-movement is provided, the former as "substitution" involving A-positions, and the latter as "adjunction" involving non-A-positions (pp. 25ff, 51).

Government is defined primarily as a relation between the head and other immediate constituents of a phrase. The definition of government in (15) is from Chomsky (1982:19); some discussion of various alternative definitions can be found in Chomsky (1981b:162-167).[6]

(15) A governs B if A is a zero-level category which c-commands B, and B is not protected by a maximal projection (i.e. a maximal projection that dominates B must also dominate A).

Possible governors are thus restricted to zero-level heads N, V, A, P, and INFL, and at least some notion of "command" is relevant (cf. Chomsky, 1981b:162fff, 1982:n.14). Government is blocked by maximal projections. In the exceptional situation where a head appears to govern an element which is not an immediate constituent of the phrase, but rather an immediate constituent of an immediate constituent of the phrase, it is proposed that the maximal projection normally intervening is "deleted."

(16) a. $[_{S}$ John believes $[_{S'}$ that $[_{S}$ she is intelligent]]]

b. $[_{S}$ John believes $[_{S}$ her to be intelligent]]

The phenomenon in (16b), known as "Exceptional Case-Marking" (ECM) is hypothesized to involve "S-bar deletion" (66ff, 98ff). Deletion of a maximal projection must be somehow constrained; however this task (to my knowledge) was not seriously attempted. Rather, it came into question whether maximal projections (phrasal nodes) always "protect" an element they dominate from a governor outside the phrase after all, thus leading to various possible alternative theories concerning what are "barriers" to government.

Government and Case theory interact with the theory of movement, by way of the Case Filter (17) (e.g. pp. 179f).

(17) $*[\quad]_{NP}$, where NP is phonologically realized and has no Case.

The Case Filter is said to apply at LF (pp. 49, 176). Chomsky (p. 334ff) relates it to a principle of theta-role assignment, that a "chain" (any overt argument plus the traces, if any, with which it is associated; at D-structure each chain has only one member) is assigned a theta-role by some position in the chain which either has Case or is PRO (but cf. Bouchard, 1984), leading to hypotheses that the Case Filter is motivated by "visibility" (cf. pp. 179, 334; 1982:6; cf. also Stowell, 1981; Levin, 1983; Aoun, 1979, 1985). Both theta-roles and Case are assigned under government, though an element may assign Case to a phrase without assigning it a theta-role (as in (16b)).

Government theory is also relevant in determining a well-formed representation relevant to LF interpretation.[7] The ECP (Empty Category Principle) determines that traces must have a proper relation with a "special" governor.

(18) ECP: Traces must be "properly governed."

"Proper government" is tentatively defined as "government by a lexical head" (p. 273); various options are noted (cf. Chomsky, 1982:n.19), and current views of "proper government" differ. For example, Chomsky (1986b) defines the concept as either theta-marking by a head ("theta-government"), or antecedent-government.

The idea that government is relevant to binding accounts for similarities between Case and binding theory: "The theory of Case singles out the subject of an infinitive as the one position that is not marked for Case. The theory of binding independently selects this position as the single transparent domain" (p. 157).

Since we will not have much to say about binding theory in this work, our account here will be as brief as possible. Basically, binding theory attempts to unify the two "opaque domains" relevant for the interpretation of pronouns, reciprocals, etc., as well as for certain properties of NP-movement (i.e. "NP-traces" resulting from such movement). The two opaque domains are the "tensed S" and a phrase or clause containing a subject. This was expressed earlier as two different conditions, the "Tensed S Condition" and the "Specified Subject Condition" (e.g. Chomsky, 1973). NP-movement cannot take place out of such structures, reciprocals and other "anaphors" must be bound (coindexed with some other element) within them, and pronouns must be "free" (not bound) in them.

Binding theory treats reciprocals, reflexives, and NP-traces as "anaphors," and pronouns, as "pronominals." Traces from wh-movement are "variables" and fall under the third class of NPs, "names" or "referential expressions" such as "common nouns," etc, which are always free.

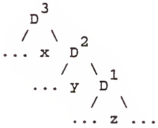
An "opaque domain" is essentially a domain with a "SUBJECT," where "SUBJECT" is defined as either a syntactic subject or AGR ("agreement"); further, this domain is relevant for the NP in question ("anaphor" or pronominal) only if it contains a governor of that NP. Government is thus claimed to be relevant in determining the domain for binding (known as "governing category" or "binding category").

Further, government is relevant to the distribution and interpretation of PRO, which is both "anaphoric" and "pronominal," and which therefore cannot be found in "opaque domains," since it is impossible for any element to be both bound and free (cf. p. 221). It is reasoned that PRO can appear only in ungoverned positions, so that no "opaque domain" can be defined for it. Put another way, there is a "transparent domain," a domain which is not a binding category, in which PRO can appear. The hypothesis that PRO is ungoverned has subsequently become a matter of much debate; we will not pursue this topic, nor the general theory of control, since these issues are not central to our thesis.

Binding theory is relevant to the interpretation of lexically realized NPs as well as to NP-movement; for this reason, it is thought to be a set of principles of LF interpretation. Bounding theory, rather than being perceived as a condition on representations, is held to involve conditions on the rules of "move alpha" which give rise to S-structures. This has consistently been Chomsky's view, though a number of linguists, e.g. Freidin (1978), Kayne (e.g. 1981a), have argued that these bounding conditions can be reduced to conditions on representations. In this work, we will adopt Chomsky's hypothesis, though the question remains open. In the theory we develop, a single basic principle of bounding theory will be proposed, while certain aspects of what has been traditionally viewed as a part of bounding theory, e.g. the principle relevant for wh-island phenomena and the "S/S-bar parameter," may be more easily viewed as a condition on S-structure (see Chapter Six).

The basic bounding principle (also known as "subjacency") restricts movement to "adjacent" domains; strictly speaking, an element can move from one bounding domain only to the "next higher" domain ("next higher" in the sense that it is the smallest domain which includes the source domain).

(19)



An element can move from z to y, and/or from y to x, but not from z to x; one "bounding node" can be crossed during a given application of "move alpha," but not two. Appropriate domains for bounding appear to include S, S', and NP, in English. Rizzi's (1978, 1982) claim is that Italian lacks S as a "bounding node" (i.e. a node which defines an appropriate "domain" for bounding). Some of Rizzi's data will be discussed in (3.2).

The theory of subjacency encounters problems in dealing with some extraction phenomena, but it did succeed in unifying Ross's (1967) "Complex NP Constraint" and "*wh*-islands" in a fairly straightforward way.

(20) a. $[_{S'}$ who $[_{\underline{S}}$ did John believe $[_{\underline{NP}}$ the claim $[_{S'}$ t that $[_{S}$ Bill saw t]]]]]

b. $[_{S'}$ to whom $[_{\underline{S}}$ did John wonder $[_{\underline{S'}}$ what $[_{S}$ PRO to give t_1 t_2]]]]

It does not account for Ross's "Sentential Subject Constraint" (21), although it successfully deals with another case of ungrammatical extraction from subject phrases (22).

(21) what $[_{S*}$ did $[_{S'}$ t that $[_{S}$ John liked t]] surprise Mary]

(22) what $[_{\underline{S}*}$ did $[_{\underline{NP}}$ John's interest in t] surprise Mary]

The extraction in (21) might be ruled out by claiming that S' and S* are both crossed in the same cycle. By this argument, however, grammatical extractions such as (23) should be ruled out (Bouchard, 1987).

(23) what $[_{S*}$ did Mary say $[_{S'}$ t that $[_{S}$ she saw t]]]

Further, no structural condition seems to be able to account for the distinction illustrated in (24), unless the two are seen as having different structures.

(24) a. who did you read a book about

b. who did you destroy a book about

Options have included having a "readjustment rule" extrapose the PP in (24a) so that _wh_-movement is possible (Chomsky, 1977b), or having the PP in (24a) generated at D-structure in a position outside the NP, _the book ...._

(25) a. who did you read [a book] [about t]

b. who did you destroy [a book [about t]]

In the instance where _about t_ is inside NP (25b), extraction should be ungrammatical. If the difference is perceivable at D-structure, this means that (25a) should have a meaning something like "what are you reading about" when the extraction is grammatical, but something similar to "what kind of book are you reading" in the ungrammatical extraction. Judgments are not as clear (to my knowledge) as one might expect. Further, from the point of view of the readjustment analysis, it is unclear why _read_ should allow readjustment while _destroy_ does not. In the base structure analysis, why _read_, but not _destroy_, is allowed to have this type of PP complement remains something of a mystery (notice _destroy_ allows PP complements, e.g. as in _I destroyed the documents for you_).

Current theories also seem unable to capture the difference between (26) and (27).

(26) *who did you read stories about pictures of

(27) who did you destroy copies of pictures of

Here, we will propose that (26) and (27) are quite different in structure, explaining their different behavior with respect to extraction.

Some linguists have proposed a semantic condition on _wh_-movement (cf. Engdahl, 1980, 1981; Chomsky, 1986b). The idea revolves around distinctions such as that in (28).

(28) a. who did you read a book about
b. who did you read that book about

First, notice that it is not clear why the "readjustment rule," or having _about t_ as a complement of the verb, should be impossible when a "specific" determiner such as _that_ is present.[8] In any case, the "specificness" of the NP _that book_ should not affect extraction from the PP if the PP is not inside that NP. Consider further the difference in (29).

(29) a. what did he make a claim to have seen
b. *what did he make that claim to have seen

From one point of view, "Specificness" might be seen to involve a separate condition, which affects two instances of the same structure differently, based on semantic considerations. It is curious, however, that "specificness" does not appear to play any significant role in extraction from subject phrases (cf. Huang, 1982).

(30) a. what did a book about shock Mary
b. what did that book about shock Mary

If "specificness" affects extraction from an NP (etc.) in different ways, depending on the NP's grammatical relation, (i.e. its syntactic position), then perhaps "specificness" has some structural consequence, which results in the blocking of extraction by interaction with bounding principles. A general goal of this study will be to develop principles of bounding and government, and to propose that "specificness" has some simple but crucial effect on the structure of a given phrase, putting certain limits on the nature of possible movements for a given structure.

If it is true that the crossing of certain phrasal nodes is barred or "marked," then the analysis of basic D-structures is crucial for a theory of movement and bounding. Hypotheses concerning which XPs are bounding nodes rely on hypotheses involving what has been crossed. The version of X-bar theory adopted thus has direct consequences for the theory of bounding.

Current research in X-bar theory has led to proposals concerning the generalization of X-bar principles to "nonlexical categories" (in Chomsky's terms, categories which are [-N, -V]), including INFL (I), seen as the head of

S (=IP), and COMP, the head of S' (=CP), as well as determiners, so that what are normally thought of as "noun phrases" are actually "determiner phrases" (cf. Hellan, 1986; Fukui, 1986; Speas, 1986; Abney, 1987), etc. The extent to which X-bar theory is "generalized" in this sense will determine our conception of phrase structure, which will in turn affect our view of how movement works. The purpose of this thesis is to explore what implications a freely generalized X-bar theory might have for theories of bounding and government.

To make sense of the basic proposals which we will set out with, it will be necessary to outline the claims of the theories of bounding and government of Chomsky (1986b) ("Barriers theory"), as well as the rudiments and our modifications of "generalized X-bar theory" (Abney, 1987 and related work), which serve as our points of departure. Barriers theory serves as a point of reference as well, in that we search for some unification and integration of bounding theory and government theory, through a concept of "barrier," and in that we attempt to account for the range of data discussed in Chomsky (1986b).

1.4 Overview

The remainder of the thesis is organized as follows: Chapter Two outlines Barriers theory and presents "generalized X-bar theory." An initial attempt is made to combine the two systems of hypotheses, but they seem only partially compatible. Issues arising from this attempt at unification lead to an exploration of a somewhat different theory, which does away with adjunction, which seeks to account for the distribution of "empty categories at D-structure" (also known as "dummy positions"), and which attempts to be explicit about how and why "L-marking" (roughly, theta-marking by a "lexical" category)[9] affects extraction, as Barriers theory claims, and why "bounding nodes" seem to behave as "barriers" to different extents, depending on how they are "crossed" (extracted out of).

Chapter Three establishes the basic concepts and hypotheses of the theory to be investigated, including "free X-bar theory," as well as the distinctive properties of "nonlexical" vs. "lexical" phrases (in the sense of Abney, 1987 and related work--e.g. AuxP vs. VP, DetP vs. NP, etc.) and their effect on the theory of landing sites for movement via the Projection Principle. Also introduced is the crucial distinction between "bridging" (crossing a phrasal node using a dummy immediate constituent position in it) and "skipping" (crossing a phrasal node any other way). The Projection Principle is extended so that dummy positions, and thus landing sites for movement, are licensed only in heads or SPECs of "nonlexical phrases."

The major principle of bounding theory is proposed, that only one "lexical phrase" can be "skipped" in a single application of "move alpha." Another type of barrier is proposed, the "CFP-barrier" (a "nonlexical phrase" which is assigned a "theta-function"--a theta-role or a "modifying" function). In standard English, these phrases (at least when they are arguments) can be crossed only by bridging, but some languages, e.g. Italian, may allow one, but not two, to be skipped (the "S/S-bar parameter"). Further, a CFP is only bridgeable if it is "L-marked," a stipulative "condition on bridging" which is apparently needed to account for the impossibilty of bridging subject or adjunct phrases. This condition is not enough, however, to account for strong violations--for example, a typical ungrammatical extraction out of subjects, such as those covered by Ross's "Sentential Subject Constraint," is predicted to be "marginal" in English and grammatical in Italian--and here we encounter evidence that IP (S) might count as an "LP-barrier." That is, IP seems to pattern with other nodes of which only one can be skipped "at a time." Finally, in this chapter we make a first attempt at addressing a central claim of Barriers theory, that nodes which are relevant to defining "bounding domains" are also relevant to domains in which the relation of "government" can hold between two elements.

Chapter Four explores the interacting factors which provide the conditions under which bridging can take place. First is discussed the distribution of empty categories ("dummy positions") at D-structure, accounted for by the Projection Principle, the lexical/nonlexical distinction, some type of "licensing," commonly referred to as "L-marking," and an independent "semantico-syntactic" principle which requires a "specific" phrase to have a filled (lexicalized) SPEC. "L-marking" for wh-movement may involve the assignment of some feature which must be carried by SPEC, and which therefore can license an empty SPEC when there is no lexicalized one. Thus wh-bridging can be blocked by a filled SPEC even if the phrase is "L-marked." Tensed clauses may have the SPEC of some "nonlexical phrase" filled, forcing a bounding violation; here we consider whether tensed clauses have a filled SPEC of AxP.

We then turn to marginal but relatively grammatical movement out of adjunct phrases in English, to further show that the lack of "L-marking" hinders but does not necessarily bar extraction; it only bars bridging. At this point, further properties of "specific" phrases are explored, as we propose that a "determiner" may appear in SPEC or head position, depending on whether it is "specific" or not. This analysis is integrated with a somewhat novel analysis of the "genitive specifier" (e.g. John's in John's hat), which by "free X-bar theory" can appear in the head of DP (though it must at least end up in the SPEC of DP if that DP is "specific"). Evidence for this analysis comes from Italian and "archaic" English, for example. If subjects can be defined along these lines (as heads), then DP-movement can be seen as head-to-head movement, while wh-movement (and movement to SPEC under "specificness," if there is such movement) would be X-to-SPEC movement, accounting for their different paths.

We claim further that ECM structures involving clauses (cf. (18)) are instances of DP-movement into the dummy head of CP (=S'), an empty position which must be licensed, we suggest by a type of "special L-marking." We thus return to the notion of "L-marking," seeking to distinguish whatever triggers dummy heads for "head-bridging" (bridging via an empty head) from whatever licenses dummy SPECs for _wh_-bridging, or "SPEC-bridging." We argue that "L-marking" may vary according to the categorial content of the L-marker and the type of complement. Variable "L-marking" seems related to marking for "modality" on clausal structures ("data source," "evidentiality"--e.g. a marker indicating the reliability of the source of information), and may be determined by certain semantic properties of the L-marker, when that head is N, V, or A.

It is now possible to see a clause as "specific" when it has a lexicalized subject, but "nonspecific" when there is PRO; thus the SPEC of IP is an open landing site in nonfinite clauses, so that IP can be SPEC-bridged. This in turn makes it possible to see IP as an LP-barrier, a hypothesis considered in Chapter Three, but rejected because there were cases of grammatical extraction which appeared to skip both IP and another LP in the same movement. It turns out that IP is not skipped in these instances under the analysis now available, though it is skipped in strong violations resulting from extraction out of subjects, finite clauses, etc.

In Chapter Five we also suggest that IP is a unique syntactic category, in that it possesses both "lexical" and "nonlexical" properties. Another special type of category is PP, which like a CFP is assigned a "theta-function" (a theta-role or a modifier-function), but which like an LP can have "referential" content. We explore the idea that PP is treated as an LP-barrier in most languages, thus barring P-stranding, but in English it is treated as if it were a CFP, in that it can be bridged if it is "L-marked." We find evidence that theta-marked PPs behave as LP-barriers, while adjunct PPs are treated as CFP-barriers. We also address the issue of INFL, and propose the head of IP to be exocentric, attempting to account for the different paths of DP-movement and V-raising. Some evidence is presented that head-movement is category-sensitive. Along these lines, a tentative feature system is adopted using the lexical/functional distinction, with certain general principles ruling out the feature combinations not actually manifested. The feature system is related to types of "L-marking," as well as to clusters of properties associated with classes of syntactic categories.

Chapter Six attempts to draw together the theory as presented up to that point, seeking to unify and refine it, and to consider some of its properties, possible implications, and problems.

1.5 Notes

[1] The tree in (4) illustrates adjunction to a phrase. In recent work, Chomsky (1987b) suggests that the infinite character of "modification" might indicate base adjunction at some intermediate level of X, following Fukui (1986) and drawing from the work of Baker (1978) and others. The conservative hypothesis would be that adjunction during movement is always as in (4), i.e. adjunction to the phrase (maximal projection).

Adjunction has also been used to describe how INFL can contain AGR (agreement). It is notable that one of the most common uses of the adjunction-during-movement analysis, i.e. the conception of _wh_-movement as adjunction to COMP, has been recast as substitution in Barriers theory, in the form of movement to the SPEC of COMP Phrase (=S'), ironically at the same time that the use of adjunction is extended to other aspects of movement.

[2] We speak of two fragments here, but it is not clear that adjunction cannot occur recursively, as Denis Bouchard has pointed out. See Chapter Two.

[3] In the following structure, A dominates B, C, and D, and it immediately dominates B and C, but not D. Further, C does not dominate A even though C is higher in the tree. Basically, A can be said to immediately include or consist of B and C, and C immediately includes or consists of D, but B does not include either C or D. "Domination" is thus basically "inclusion;" cf. Chomsky (1986b).

[4] Chomsky's discussions of X-bar theory have always been brief, but there have consistently been claims that X-bar theory is a principle for "lexical categories," in his sense (cf. n.8), until Barriers theory, where X-bar is extended to P, INFL, and COMP. See also Chomsky (1987b) for discussion of "the DP hypothesis." Jackendoff (1977) attempted to generalize X-bar theory to other categories, but in particular encountered problems with extending it to most SPECs and modals (corresponding to INFL) in the standard system, e.g. (i).

```
(i)           NP
             /  \
         DetP    N'
         ...    /  \
               N    ...
```

[5] Note that the grammatical relations here are determined by categorial features as well as structural positions, i.e. subjects and objects are NPs. This is a conservative view from the standpoint of subjects, since it is not clear that clauses can be subjects (Koster, 1978a), as since PP and AP subjects are possible, though restricted to subjects of copulative and raising verbs. However, it is generally accepted that clausal complements are "objects," i.e. that the embedded clause that you left has is "object of the verb" in I know that you left. Further, it seems to me at least plausible that some PPs are arguments while others are modifiers; cf. we listened to her vs. we listened in the control booth. Refinements in the theory may make it possible to remove categorial stipulations in the definition of grammatical relations. The peculiarities of subjects may be related to the "specificness" principle, as we will discuss in Chapter Five.

[6] The standard definition of c-command, following Reinhart (1976), is:

> A c-commands B if A does not dominate B and if the first "branching node" which dominates A also dominates B.

[7] There has been some debate about how the ECP applies. Chomsky (1981b, 1982) argues that the ECP operates on S-structures, but subsequent arguments have been presented (Huang, 1982; Lasnik and Saito, 1984) that proposed rules of "move alpha" in LF observe the ECP--which would mean that the ECP would apply at LF. In Chapter Three and Six, we will propose a condition on S-structure representation apart from bounding theory and the ECP.

[8] We will not attempt a rigorous definition of "specificness" here, but the basic idea derives from the specific vs. generic distinction found in noun phrases (e.g. I was looking for a book, but I couldn't find it vs. I was looking for a book, but I couldn't find one)--cf. Celce-Murcia and Larsen-Freeman (1983) for fairly recent discussion. As we will see, however, this "specificness" may be related to the "specificness" of clauses with overt subjects. Though I do not believe that a semantic connection is far-fetched, I will not attempt to discern it here; cf. the notion of "explicitness" of Quirk et al. (1972:860f).

[9] Here we should clarify two different uses of the "lexical/nonlexical" distinction. Chomsky has treated the "content categories" N, V, and A as "lexical," where "lexical" is defined as [+N] and/or [+V]. P, INFL, and COMP

are all "nonlexical" ([-N, -V]); cf. Chomsky (1970), (1981b), etc. The status of Aux, Det, and Deg is less clear. If N, V, and A are THE lexical categories, then P, INFL, COMP, Aux, Det, and Deg are all "nonlexical." Features must be added to this system to distinguish among the six, and it seems reasonable to assume they should account for why Aux is associated with VP, Det is associated with NP, etc. If we assume that Aux and Det are differentiated by the same features that distinguish V and N, our definition of "nonlexical" changes, as the distinction is seen as a feature of itself (ii). (Abney's 1987:60ff feature system differs from that in (ii)).

(i)

	N	V
N	+	-
V	-	+
A	+	+
Det	-	-
Aux	-	-
Deg	-	-
	...	

(ii)

	N	V	F
N	+	-	-
V	-	+	-
A	+	+	-
Det	+	-	+
Aux	-	+	+
Deg	+	+	+
	...		

The system in (ii), however, encounters some problems with other categories, as we will see in Chapter Five.

CHAPTER 2
STANDARD BARRIERS THEORY AND GENERALIZED X-BAR THEORY

2.1 Introduction

There has been a growing tendency in current work to generalize X-bar theory to various "nonlexical" ("functional") categories. For example, Chomsky (1986b) extends X-bar to COMP (C) and INFL (I), so that S is IP and S' is CP. IP's specifier (SPEC) corresponds to the traditional "subject of a clause," and the SPEC of CP is taken to be a landing site for "wh-movement."

```
(1)    a.          I"               b.           C"
                  /  \                          /  \
                NP    I'                      WH    C'
                     /  \                          /  \
                    I    VP                       C    IP
```

A number of linguists (e.g. Brame, 1981; Fukui, 1986; Hellan, 1986; and Abney, 1987) have proposed as well that the "noun phrase" is actually a "determiner phrase" (the "DP hypothesis").[1]

```
(2)             D"
               /  \
          (DP's)   D'
                  /  \
                 D    "NP"
```

Abney (1987) even goes so far as to suggest that X-bar theory might hold for all elements once thought to be "specifiers" in lexical phrases, including auxiliaries (Ax) and degree words (Dg), so that all lexical phrases (LPs) are complements of nonlexical heads (Fs).

```
(3)      a.   AxP                b.    DgP
             /  \                     /  \
                 Ax'                      Dg'
                /  \                     /  \
              Ax    VP                 Dg    AP
```

Once X-bar has been made relevant to some nonlexical categories, it seems reasonable to explore the idea that it holds for them all, this being the "conservative" hypothesis. For instance, saying X-bar holds for C and I but not for D and Ax would be similar to stating that it holds for, say, VP and AP, but not NP. Until we have a reasonable amount of evidence to suggest that some lexical or nonlexical phrase does not participate in X-bar theory, the safest assumption seems to be that it holds generally.

In this work, "generalized X-bar theory" will refer to the theory here outlined, which consists essentially of the claims in (4).

(4) a. X-bar theory applies to all heads, nonlexical as well as lexical.

b. All lexical phrases (LPs) are complements of nonlexical heads.

What has traditionally been referred to as "S-bar" will be assumed to have the structure of (5). Following Chomsky (1986b), we will adopt the hypothesis that I is a nonlexical head, but as a point of departure, since we will come upon various phenomena which give evidence that the status of IP is at least an open question.

```
     (5)    CP
           /  \
               C'
              /  \
             C    IP
                 /  \
                DP   I'
                    /  \
                   I    AxP
                        / \
                          Ax'
                         /  \
                        Ax   VP ...
```

At the same time that X-bar theory has been generalized in current research, Chomsky (1986b) (Barriers; "Barriers theory" hereafter) formulates a unified theory of "barriers," relevant to government and (generally) to bounding, which makes crucial use of adjunction to (nonargument) XPs at S-structure. It seems clear that combining an X-bar theory of a broad scope with a theory of S-structure adjunction creates a significant amount of "abstract" syntactic structure. Furthermore, generalizing X-bar theory in the way just described creates a number of slots which appear to have no obvious use, except perhaps for movement, such as the SPEC of CP and SPEC of AxP. The possibility of the existence of the latter syntactic position is particularly striking in view of the significance of "VP-adjunction" in Barriers theory; perhaps the SPEC of AxP can perform the function of "VP-adjunction" in providing an "intermediate" landing site, possibly even to avoid a VP "barrier."

It is also worth noting that Barriers theory itself supplies principles which point up a crucial similarity between positions created by S-structure adjunctions and SPEC positions in general: Both are included "within" a certain phrase but governable from outside this phrase. Therefore, the possibility that phrasal movement involves only SPECs of nonlexical categories, and that bounding theory might be formulated to accommodate such a generalized X-bar theory, seems worthy of serious investigation.

Two immediately perceptible advantages of such an analysis are that 1) it explains why dummy positions furnishing landing sites for movement should be available, as positions predicted to be present but left unfilled, and 2) it can provide a way to "cross a barrier" without resorting to S-structure adjunction.

Put generally, we will attempt to unify two trends of thought in current linguistic research, seeking a larger picture which integrates generalized X-bar theory and some sort of theory of "barriers" to movement and government, in a plausible and revealing way.

2.2 Barriers Theory

We begin with a somewhat brief description of Barriers theory. The basic hypotheses presented in Chomsky (1986b), continuing in the general framework established in Chomsky (1981b), will be described here in terms of the subtheories in (6).

(6) a. X-bar theory
b. barrier theory
c. government theory
d. movement theory
e. theta-theory

X-bar Theory

X-bar theory is generalized to the nonlexical categories, I and C; S is IP and S' is CP (as noted above), where XP = X".[2]

(7) a. X" = X* X'
b. X' = X* X

X* in (7a) is referred to as a "specifier" (SPEC); under certain circumstances, it is also a "subject." The nonhead in (7b) is termed a "complement," or "object." This generally follows standard practice (e.g. Chomsky, 1970, 1981b).[3]

Progressive bar-numbering is assumed in standard X-bar theory, so that the schema in (8) is followed (cf. Jackendoff, 1977; van Riemsdijk, 1978, etc.). There are a few respects in which (8) is not observed in Barriers theory, however.

(8) X^{n} --> ... X^{n-1} ...

Base-generated adjunction (developed in Stowell, 1981, 1983; see also Baker, 1978; Lightfoot, 1982, etc.) observes the basic principle of "endocentricity" in X-bar theory; in (9), XP is the head of XP'. Adjunction in the base, however, violates the principle of progressive bar-numbering.

S-structure adjunction in Barriers theory (claimed to be like the LF-adjunction developed in May, 1979b) violates both endocentricity and progressive bar-numbering by breaking up an XP into XP' and XP in (9). Therefore, X-bar theory does not necessarily hold at S-structure. Barriers theory must be able to distinguish between the various adjunctions at the levels of D-structure, S-structure, and LF, though it is not at all clear how this is to be done.

(9) $[_{XP'} \; [_{XP} \quad] \quad]$

The principle of progressive bar-numbering is also violated by the following hypothesis, stated in Barriers theory: If SPEC is absent from a phrase, an XP may optionally lack X'.[4]

(10) a. $[_{XP} \; [_{X'} \; X \;\; YP \;] \;]$

b. $[_{XP} \; X \;\; YP \;]$

In short, the X-bar schema (8) is not adhered at D-structure or S-structure, according to Barriers theory and other theories incorporating adjunction, all of which loosen the "requirement" of progressive bar-numbering. Further, even endocentricity can be violated at S-structure. This is feasible as long as the rules which operate on endocentric structures are restricted in character. Thus, X-bar theory (in whatever form) can be said to be indirectly relevant at other levels, in that it is observed unless some specific operation modifies the structure dramatically, e.g. the "segmentation" of S-structure (and LF, according to May, 1979b) adjunction.

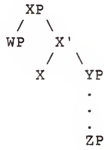
Barrier-theory

Core barrier-theory, relevant to both government and movement, makes use of the following concepts (p. 15).

(11) X theta-governs Y iff (if and only if)
X is a zero-level category that theta-marks
Y, and X and Y are sisters.

"Y" is a YP by the usual assumptions. Thus, X theta-governs YP, but not ZP or WP in (12).

(12)



(13) X L-marks Y if X is lexical and Y agrees
with the head of Z that is theta-governed
by X. (p. 24)

Thus, in (14), X L-marks YP, Y', Y, and WP, but not ZP (where indexing indicates agreement; such agreement holds of at least IP and CP (pp. 24ff), possibly also NP.

```
(14)          X'
             / \
            X   YP
                  i
                / \
              WP   Y'
                i
                   / \
                  Y     ZP
                   i
```

(15) a. ZP is a blocking category (BC) for Y iff ZP is <u>not</u> <u>L-marked</u> and ZP dominates Y.

b. ZP is a <u>barrier</u> for Y iff (i) or (ii)
(i) ZP immediately dominates a BC for Y
(ii) ZP is a BC for Y, when Z is not IP.

Assume F in (16) is a nonlexical category. Then, if ZP is not IP, ZP is a BC and a barrier for Y.

(16) $[_{WP}$ X F $[_{ZP}$ Y]]

If WP immediately dominates ZP, WP inherits barrierhood for Y from ZP (even if ZP is IP). But WP is not a barrier for X by inheritance; it can only be a barrier for X inherently.

<u>Government Theory</u>

Government is defined in terms of "barriers" and two other central notions.

(17) X <u>m-commands</u> Y iff X does not dominate Y and every maximal projection which dominates X also dominates Y. (Aoun and Sportiche, 1983)

We assume throughout that no node dominates itself.[5] In (18), XP and YP m-command each other.

(18)

```
                ZP
               /  \
          XP        Z'
         /  \      /  \
      JP     X'   Z    YP
            / \       /  \
           X   KP    OP    Y'
                          /  \
                         Y    MP
```

XP also m-commands JP and KP, but JP and KP do not m-command XP (or anything else "higher" than YP). Similarly, YP m-commands OP and MP, but OP and MP do not m-command anything beyond XP. Z m-commands all categories in (18), except ZP, since ZP does not dominate itself.

(19) X *excludes* Y if no segment of X dominates Y.

(20) $[_{Z}\ Y\ [_{X}\ ]\ ]$

If Z is not a segment of X (e.g. an adjunction structure resulting from movement), then X excludes Y. If Z is a segment of X, X does not exclude Y, although X does not dominate Y (only a segment of X does).

(21) a. X *governs* Y iff X m-commands Y and there is no Z, Z a barrier for Y, such that Z excludes X.

In adjunction structures such as (22), if XP is a barrier for z, it is not a barrier to government of z by y, since XP does not exclude y.

(22) $x\ [_{XP'}\ y\ [_{XP}\ z\ ]\ ]\ ]$

However, x cannot govern z because XP dominates z and excludes x. Since XP does not dominate y, XP cannot be a BC for y, even though XP excludes x. Even if XP' inherits barrierhood from XP, it could do so only for z, not for y. A segment never acts as a barrier by itself.

Take a simple case of *wh*-movement, as in (22).

(23) [$_{CP}$ what did [$_{IP}$ John [$_{VP'}$ t' [$_{VP}$ see t]]]]

The trace t' governs t, even though VP is a BC and a barrier for t, because VP does not exclude t'. Since VP does not dominate t', (only a segment of VP does), VP cannot be a BC or barrier for t', even though VP excludes *what*. IP inherits barrierhood for t from VP, but IP cannot be an inherent barrier (for t'), by stipulation (cf. (15)); so, *what* governs t'.

The principle (24) is the "narrow formulation" of the Minimality Condition, which motivates the addition of (25) to the notion of "barriers to government" in (15).

(24) X does not govern Y in:

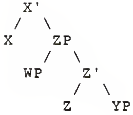
(i) X ... [$_{Z}$ ... W ... Y ...]

if Z is a projection of W excluding X
and if Z immediately dominates Y.

(25) a. Z is a barrier to government for Y if Z is an immediate projection of W, a zero-level category distinct from Y.

(i) I' is not a barrier.
(ii) The minimal governor must have features to create a barrier.

(26)



In (26), Z' is a barrier for government of YP, since Z' is an immediate projection of Z, and Z is a zero-level category distinct from YP. ZP is not a barrier by this "narrow formulation" of Minimality, because it is not an immediate projection of a zero-level category. Therefore, unless ZP is a barrier by (15), X governs Z', Z, and WP, but not YP. The narrow formulation of Minimality is the only principle of Barriers theory which allows a nonmaximal projection to be a barrier (to government).

It has been claimed that a trace must be "properly governed;" this principle is known as the Empty Category Principle (ECP) (cf. Chomsky, 1981b; (28) and (29) are due to Lasnik and Saito, 1984).

(27) X properly governs Y iff X theta-governs or antecedent-governs Y.

(28) If X properly governs Y, Y receives [+gamma] marking. If Y is not properly governed, it receives [-gamma] marking.

(29) Gamma-marking is determined for arguments at S-structure, for adjuncts, at LF.

(30) ECP: Nonpronominal empty categories must be properly governed.

Since an adjunct trace is not theta-governed, it must be antecedent-governed. Therefore, if Z is a barrier for government of a trace Y by some antecedent X, then Y must be theta-governed, or the structure will violate the ECP.

(31) $*[_{\text{CP*}}$ how $[_{\text{C'*}}$ did $[_{\text{IP*}}$ John $[_{\text{I'*}}$ e' $[_{\text{VP'*}}$ t" $[_{\text{VP*}}$ tell you

$[_{\text{CP}}$ which car $[_{\text{C'}}$ e $[_{\text{IP}}$ PRO $[_{\text{I'}}$ to $[_{\text{VP'}}$ t' $[_{\text{VP}}$ fix T t

]]]]]]]]]]]

The trace T of *which car* is theta-governed and thus T satisfies the ECP. Then t' can safely be assumed to be one of the traces of *how*; then t is properly governed by it, since VP does not block antecedent-government of t by t'; VP does not exclude t'. I' cannot be a barrier by Minimality for t' by stipulation. IP is not L-marked, so it is a BC, but not an inherent barrier (by stipulation). CP, however, inherits barrierhood for t' from IP. (Note that C' is not a barrier by Minimality because C has no features; note also that CP is not a barrier for *which car*, irrelevantly, since CP is L-marked and thus not an inherent barrier.) VP is a barrier for t', but it does not exclude t". The one barrier to government of t' by t" is CP.

The ECP is, in effect, irrelevant to adjoined traces which antecedent-govern A-positions, since they can delete at LF before gamma-marking, following Lasnik and Saito (1984). Chomsky (1986b) discusses this in reference to (32), which is judged to be "at most a weak *wh*-island violation" (pp. 21ff).

(32) who did $[_{IP}$ they $[_{VP'*}$ t" $[_{VP*}$ wonder $[_{CP}$ whether

$[_{IP}$ PRO to $[_{VP'}$ t' $[_{VP}$ consider $[_{IP}$ t (to be)

intelligent]]]]]]]]

The trace t is not theta-governed (not assigned a theta-role by a sister head), so it must be antecedent-governed, which it is, assuming VP-adjunction, by t'. The "weak wh-island" must involve the movement from the position of t' to that of t", during which one barrier (CP, inheriting barrierhood for t' from the BC, IP) is crossed.

This barrier should be somehow irrelevant to the ECP, however, or the violation would be too strong. That is, the barrier CP should also block antecedent-government of t' by t", but this would make (32) too ungrammatical. If the trace t' is deleted after gamma-marking of t at S-structure, and before gamma-marking of adjuncts at LF, its status is irrelevant for the ECP. Note that this is the only way to obtain a weak subjacency violation alone, i.e. to have one barrier relevant to movement but irrelevant to government, when the source trace is in an A-position. When movement occurs from a non-A-position, one barrier is sufficient to block the construction.

(33) a. X $[_{B}$ $\underset{\substack{\vdots \\ 0}}{t''}$ ... $[_{IP}$ t' $[_{I'}$ I VP]]]

b. X $[_{B}$ $\underset{\substack{\vdots \\ 0}}{t''}$ ... $[_{VP}$ $[_{V'}$ V t']]]

c. $*X \; [_{B} \; t'' \ldots [_{XP} \; [_{X'} \; X \; (YP) \; t' \;] \;] \;]$

d. $*X \; [_{B} \; t'' \ldots [_{X} \; t' \; [_{X} \; \ldots \;] \;] \;]$

(34) a. who did you wonder whether to consider t intelligent
b. what did you wonder whether to fix t
c. *how did you wonder whether to fix the car t

Movement Theory

Movement has been claimed to be "structure-preserving," in a sense to be defined. Perhaps the strongest form of this principle would prevent movement from creating, changing, or eliminating syntactic structure. Movement would then involve only positions represented at D-structure. S-structure adjunction, however, is a means by which movement rules "break up" structure, the result of this being a "new" syntactic position available as a landing site. Yet, structure-preservingness is seen to be relevant to adjunction in that it restricts the class of syntactic entities which can be adjoined to XP.

In Barriers theory, *wh*-movement is conceptualized as movement to the SPEC of CP, and NP-movement, to the SPEC of IP. To this extent, both "types" of movement involve "substitution," i.e. movement that is "purely" structure-preserving. Structure-preservingness sees to it that XP (not X' or X) can move to SPEC (given the additional stipulation that SPEC must always be an XP), and that only a zero-level category can move to another head position ("head-movement").

Barriers block movement in essentially two ways. One barrier is sufficient to block government, and it is therefore relevant to the ECP, ruling out certain structures created by movement. Such barriers are crucial, as we have seen, when a trace must be antecedent-governed, as in the case of adjuncts. The Minimality Condition is said to account for the noun-complement type of "complex noun phrase," and perhaps for the "that-trace effect."

(35) a. *what did $[_{IP*}$ John $[_{VP'*}$ t^4 $[_{VP*}$ announce $[_{NP}$ a $[_{N'}$ plan $[_{CP}$ t^3 $[_{IP}$ PRO to $[_{VP'}$ t^2 $[_{VP}$ fix t^1]]]]]]]]]

b. *who did $[_{IP*}$ John $[_{VP'}$ t" $[_{VP}$ think $[_{CP}$ t' $[_{C'}$ that $[_{IP}$ t left]]]]]]

CP in (35a), unlike a relative clause CP, is presumably theta-governed, and thus L-marked (by N), so CP does not appear to be a barrier. NP is also L-marked (by V). There are no barriers without Minimality. Chomsky points out that even if we suppose that CP is not exactly ("directly") theta-governed by N, thus making CP a BC and a barrier, NP would inherit barrierhood from CP, making the violation too strong.

Rather than stipulating that NP cannot inherit barrierhood, Chomsky suggests that Minimality creates a barrier for antecedent-government of t'. N' is a barrier for t' which excludes t" (by the narrow formulation in (24);

even by the broader formulation, the barrier would be NP, which also excludes t"). Similarly, C' in (34b) blocks antecedent-government of t by t'. In (36), the proviso (i) in (25) comes into play, i.e. C has no features and cannot serve as a "minimal governor" for Minimality, so that C'/CP cannot be a barrier.[6]

(36) who did $[_{IP^*}$ John $[_{VP'}$ t" $[_{VP}$ think $[_{CP}$ t' $[_{C'}$ e $[_{IP}$ t left]]]]]] .

Movement is blocked outright by bounding principles when it crosses two barriers. Crossing one barrier results in only a "weak violation," as in (37), which involves a "wh-island."

(37) ?what$_i$ did $[_{IP}$ you $[_{VP'^*}$ t" $[_{VP^*}$ wonder $[_{CP}$ [to whom]$_j$ $[_{IP}$ to $[_{VP'}$ t' $[_{VP}$ give t$_i$ t$_j$]]]]]]]

CP inherits barrierhood for t' from IP. Since t$_i$ is theta-governed, t' can be deleted at LF and irrelevant for the ECP. Nevertheless, the movement itself crosses one barrier, and subjacency is only "weakly" violated.[7] (Problems for this analysis will be discussed below.) Movement from within subjects crosses two barriers (subsuming the "Sentential Subject Constraint" of Ross, 1967, and the "Subject Condition" of Huang, 1982, etc.).[8]

(38) *the man $[_{CP}$ who $[_{IP}$ $[_{NP}$ pictures of t] are on the table]]

NP is not L-marked (following the assumption that subjects receive theta-roles "compositionally"; see Chomsky, 1977; Marantz, 1984, etc.). It is therefore a BC and a barrier. IP immediately dominates a BC (NP), so it inherits barrierhood for t. (IP is also a BC--though never an inherent barrier.)

Subjacency is also claimed to account for the lack of extraction from within relative clauses.

(39) *what did $[_{IP*}$ John $[_{VP'*}$ t" $[_{VP*}$ meet $[_{NP}$ a man $[_{CP}$ who $[_{IP}$ e $[_{VP'}$ t' $[_{VP}$ fixed t]]]]]]]

CP is not L-marked (since it is not an argument); it is therefore a BC for t', and NP inherits barrierhood from CP. CP is also a barrier for t' by inheritance from IP. Movement from the position of t' to that of t" crosses two barriers. By Minimality, furthermore, N'(/NP) should be a barrier to government, the t"-t' relation then violating the ECP. The trace t' can be deleted, however, as long as it is the trace of an argument. Minimality thus accounts for the difference between argument and adjunct extraction from relative clauses.

The structure in (40) also violates both subjacency and the ECP. CP and N'/NP block antecedent-government of t', which is not otherwise properly governed, as an adjunct. NP inherits barrierhood from CP as in (39), so subjacency is violated as well.

(40) *how did [$_{IP*}$ John [$_{VP'*}$ t" [$_{VP*}$ meet [$_{NP}$ a [$_{N'}$ man [$_{CP}$ who
[$_{IP}$ [$_{VP'}$ t' [$_{VP}$ fixed the car t]]]]]]]]]

Theta-theory

Barriers can be "escaped" by adjunction, which supplies the position for an antecedent-governor which is not excluded by the barrier phrase. Thus, VP should always be a barrier, since VP is theta-marked by a nonlexical category, I, and thus is not L-marked. But movement by adjunction allows a kind of "deflection" of the barrier. In (41), t' is dominated only by a segment of VP; it is not excluded by VP, but it is not dominated by VP, either.

(41) [t' [... t ...]]

Adjunction is powerful enough to negate the effect of any barrier, but it is claimed that segmentation makes a phrase "invisible" to theta-marking. Therefore, (43) follows from the Theta-criterion (42) (cf. Chomsky, 1981b, 1982, etc.).

(42) Theta-criterion
a. A theta-role is assigned to one and only one argument.
b. An argument is assigned one and only one theta-role.

(43) Adjunction is only to nonarguments.

Further, since the Projection Principle (44) requires the presence of arguments, not adjuncts, it is claimed that the difference in determination of proper government of arguments and adjuncts follows from theta-theory. That is, gamma-marking is determined for arguments at S-structure, for adjuncts, at LF (=(29)).

(44) Projection Principle: The Theta-Criterion holds at D-structure, S-structure, and LF.

Problems with Adjunction

We have attempted a sketch of the fundamental principles of Barriers theory. While it is not one of the goals of this work to review Barriers theory in any depth (see Lightfoot and Weinberg, 1988), a number of its properties will be relevant to our discussion; we point out a few central ones here.

X-bar theory is said to hold strictly only at D-structure. Base adjunction allows nonprogressive bar-numbering but does not violate the "endocentricity" principle that makes up core X-bar theory. However, adjunction at any level of representation still observes some principle of "progressive or equal" bar-numbering. Another factor determines when this "progressive or equal" schema does not have to be observed--whether a SPEC is present. Only if SPEC is absent can the "progressive or equal" principle be violated.

```
(45)        X"
           / \
          X   YP
```

Projection is thus a complicated affair even at D-structure. Generally, the most we seem to be able to say is that projections must "ascend."

(46) X^{n} ---> ... $X^{n(-z)}$ ...

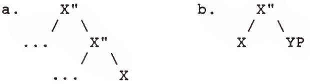
(where $z < n$, and $z \neq 0$)

S-structure and LF adjunction appear to be restricted to XPs. This makes some conceptual sense in that it seems plausible to suppose it is possible to segment an XP (a whole), but not any head of some XP (X' or X). Base adjunction, on the other hand, seems to have a broader range of possibilities. Base adjunction has in fact been used at all standard levels, at XP for "subjects" (Stowell, 1981, 1983), at X' for "modifiers" (Baker, 1978, etc.), and at X at least for INFL and AGR ("AGReement").

```
(47)  a.  AP          b.   NP              c.  IP
         / \              / \                 / \
  ("Subj")  AP          Det  N'       ("Subj")   I'
            ¦               / \                 / \
            A             AP   N'              I   VP
                              / \             / \
                            AP   N           I   AGR
```

There are basically two types of "adjunction," projection to an identical node, as in (47), and segmentation into two identical nodes. The trees which represent these adjunctions look the same; under Barriers theory they are apparently "interpreted" differently, depending on the level of representation at which adjunction took place. Thus, S-structure and LF adjunction, but not base adjunction, are thought to violate the endocentricty principle. Also of note is the fact that (48a) is permitted at S-structure but not at D-structure. (48a) could arise at S-structure by adjunction to the structure in (48b=45). At D-structure, however, (48a) would not be permitted, since X' is optional only if there is no SPEC, but adjunction like that in (48a) is only called for when a subject (i.e. a SPEC) is present; therefore, if XP is adjoined to at D-structure, X' is not optional.

(48)



However such details are to be worked out, it seems clear that a theory of adjunction such as that in Barriers theory will be fairly complicated. A more obvious drawback is that X-bar theory is weakened; some more general schema should then be available which is observed at all levels of syntactic representation.

Since generalized X-bar theory provides positions which can accommodate elements such as subjects and landing sites for movement, it seems that we have a plausible alternative to adjunction, opening the possibility once again that X-bar theory is observed beyond D-structure.

Nevertheless, in Barriers theory, S-structure adjunction crucially interacts with an elaborate theory of barriers to movement and government. Essentially an XP is a barrier for an element it dominates if it is not "L-marked," unless XP is an IP. Additionally, a YP immediately dominating a non-L-marked XP inherits barrierhood for elements that XP dominates. If some element is dominated by a BC-barrier, it must be able to adjoin to that BC, or movement is hindered.

Adjunction to a BC has two major effects: 1) If that BC is a barrier (i.e. if it is not IP), adjunction allows the barrier to be "crossed" in steps, and 2) since the BC is segmented, and it does not dominate the element adjoined to it, no phrase can inherit barrierhood from the BC for that element. In (49), adjunction to VP thus makes it possible to extract from a barrier phrase without exactly crossing that phrase; only one segment of VP is crossed at a time.

(49) who did $[_{IP}$ John $[_{VP'}$ t' $[_{VP}$ see t]]]

Also, IP inherits barrierhood from VP for elements that VP dominates, but VP dominates only t, not t', so IP does not inherit barrierhood for t' from VP. Adjunction affects the manner in which a node is "crossed" and the workings of barrierhood inheritance.

Adjunction, then, renders a barrier ineffective, and only two kinds of barriers appear to survive: subjects, which cannot be adjoined to (by (44)) because they are arguments, and barriers determined by the Minimality Condition. Adjunction must be constrained in some way or it will cancel out Barriers theory altogether.

Furthermore, adjunction creates some situations in which a trace is not properly governed in a grammatical extraction. Thus, as we saw with (32), problems may arise when an inherent barrier is adjoined to, since that phrase will be a barrier for the trace that is adjoined. Since adjoined traces are essentially treated as adjuncts themselves, they must be antecedent-governed; then one barrier should be sufficient to block extraction, even of arguments, except that this is where trace deletion is permitted to interact--an adjoined trace of an argument can delete. Notice that deletion is in essence a way out of a problem created by adjunction as it interacts with the theory of barriers.

In fact, it seems fairly clear that S-structure adjunction creates a number of conflicts with other principles, in weakening X-bar theory, in nullifying needed barriers, such as adjunct phrases, and in providing more adjunct traces which cannot be properly governed if they are dominated by an inherent barrier. One of the advantages of adopting generalized X-bar theory is that a theory of adjunction may turn out to be unnecessary, thus avoiding its problems.

2.3 Generalizing X-bar theory

"Specifiers" have always been$interesting in their idiosyncracies. As Jackendoff (1977) noted, parallelisms across phrases with respect to constituency were much easier to find with complements than with specifiers. Moreover, his attempt to extend X-bar theory to specifiers themselves met with limited success (and was criticized by many). The most compelling--but perhaps the only--evidence that specifiers (as conceived of at the time: determiners, auxiliaries, degree words, etc.) are themselves phrases is the specifier-like genitive (NP*'s* in English). Specifiers in general do not have the broad range of possible "satellites" that lexical heads do; certain elements (e.g. adverbials among auxiliaries) may precede, be interspersed, etc. among them, but they do not appear to have "complements" of their own, by the usual conception. On the other hand, the very lack of phrase-like characteristics makes a specifier appear to have certain properties of heads. That is, precisely because *the* has a limited number of possible constituents which can precede it, and presumably only one possible complement, NP (but perhaps also AxP, following Abney, 1987), it appears to "select" for only certain "satellites" in and of itself; then *the* seems to behave like a head.

As hypotheses concerning the nature of specifiers have been developed, it has been noticed that they appear to be involved in selectional restrictions. As is well known, Bresnan's (1970) work highlighted the cooccurrence restrictions involving V and COMP, COMP and INFL; Chomsky (1986b, 1987) points out that generalizing X-bar theory to C and I allows us to maintain the notion (Chomsky 1965) that such selection involves relations between heads. The same argument might be made to account for cooccurrence restrictions between what were once thought to be specifiers and nouns or adjectives.

(50) a. *table, *an information
b. *such happy
c. *so a person

Articles, as Ds, would select for NP; such, on the other hand, appears to be a "predeterminer" (viz. such a happy person); so it might select DP, whereas so would select AP, etc.

There have been many attempts to generalize X-bar theory (see the long list of references in Abney, 1987), and specifically to generalize it to INFL and/or COMP; see Chomsky (1981b), (1986b), Freidin (1983), for example. Abney discusses generalized X-bar theory across the board. It will not be a goal of this work to defend this generalization directly. Rather, we will assume it and attempt to see where it might lead. We will, however, outline some of the current claims.

Abney draws on a striking similarity between clauses and noun phrases in certain languages; there is a subject agreement marker on the noun, just as there is one on the verb, impressionistically speaking (e.g. in Turkish, Yup'ik, etc.; in more traditional terms, there is a marker of the "possessor" on the "possessed"). Abney proposes that basically the same kind of agreement goes on in the two phrases, i.e. agreement between subject and head. The head is thought to be INFL in clauses, and Abney claims that noun phrases also have some "inflectional" head, which has "N-bar" (now NP) as its complement. Further, he claims that this head is the determiner D.

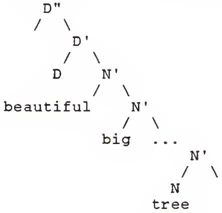
```
     (51)              DP
                      /  \
                DP-gen  D'
                        / \
                       D   NP
```

Abney then develops a theory of functional categories. Typically members of "closed lexical" classes, they select unique or restricted complements, e.g. C selects IP, I selects VP (or AuxP), D selects NP (and, in some languages, e.g. English and Turkish, VP (or AuxP), giving the gerundive). Further, they lack "descriptive content" themselves (see Hale, 1983), but seem to take on that of their complements; in fact they are often semantically, morphologically, and phonologically "dependent." Abney almost goes so far as to say that functional categories do not take arguments as complements; rather, they tend to take "predicates," such as NP, VP, IP, whereas arguments are DP, PP, and CP, in his system. Functional elements tend to have a fixed position, and they seem to be deleted under "stacking." For example, Abney points out, even expressions which normally require some functional element, e.g.

*hundred nights, cannot cooccur with it if there is another one. e.g. *those a hundred nights.[9] Relations such as selectional restrictions, agreement (and strict subcategorization) hold between functional elements and lexical heads because functional categories are themselves (nonlexical) heads.

Nonlexical heads thus appear to be peculiarly linguistic, syntactic. It is well known that functional elements are more easily omitted, later learned, and lost in "agrammatic" aphasia. Fukui (1986) and Speas (1986) go on to claim that functional and lexical categories project differently.[10] Lexical "phrases" are configurationally "open;" the functional head which has a lexical "phrase" as its complement also "closes" it. The claim here seems to be that NP has no independent phrasal status; it must be the complement of a functional head. One piece of evidence which Fukui claims for the "openness" of NP is that it is freely adjoined to, while DP is a "true" X-max.

(52)

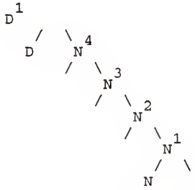


This argument is quite theory-internal, however, in that it is not clear that modifiers should be base-adjoined.

For the purposes of this thesis, we will assume that X-bar theory is generalized to all "nonlexical categories," to Det, Aux, Deg, etc., following Abney (1987). What are usually thought of as NP, VP, AP are nonlexical phrases with lexical phrases as their complements.

The version we will adopt relies essentially on Abney (1987), (cf. also Fukui, 1986; Speas, 1986; Chomsky, 1987a, 1987b; etc.), and brings in Bouchard's (1979, 1984) idea of "free projection." Unlike Fukui and Speas, we will claim that all heads project in the same way. The manner of projection and the potential for infinite projection will be claimed to be the same for both lexical and functional heads. A head projects freely, to accommodate whatever arguments and modifiers have a grammatical relation in terms of that head. "DP" and "NP" are D^{max} and N^{max}, where "max" is whatever the highest projections of D and N are. In (53), for example, D^{max} is D^1, and N^{max} is N^4.

(53)



Abney points out that if NP is a true maximal projection, the concept of m-command can account for binding of traces within DP. In this view, neither N nor its complement DP m-commands DP* in (54), and (55) is ruled out.

```
(54)        D"
           / \
         DP*   D'
              / \
             D   NP
                / \
                   N'
                  / \
                 N   DP
```

(55) *t destruction the city's

If NP in (54) is maximal, then the relations in (56) should hold, recalling the definitions proposed in Barriers theory.

(56) a. N and DP do not m-command NP,[11] D, or DP*.
b. N and DP m-command each other.
c. DP* and D m-command NP, N, DP, and each other.
d. NP is not L-marked; it is a BC and a barrier for DP.
e. No part of NP dominates D or DP*; they are excluded by NP.
f. DP* governs D, NP, and its head N, but not DP.
g. D governs DP*, NP, and its head N, but not DP.
h. A trace in DP* cannot antecedent-govern a trace in DP.

2.4 Unifying Generalized X-bar Theory and Barriers Theory

A number of considerations suggest that some version of Barriers theory might be compatible with generalized X-bar theory. First, Chomsky adopts the "narrow formulation" of the Minimality Condition so that SPEC of XP can be governed from outside. This is especially important to see that traces in SPECs of CP and IP are (properly) governed and to account for certain aspects of Exceptional Case-Marking (ECM). At the same time, the Barriers theory view of S-structure adjunction (following May, 1979) allows an adjoined trace to be in a position which is still in (part of) the phrase and yet be antecedent-governed from the outside. Essentially, two types of syntactic position are seen as both "in and out" of some XP, part of it and yet vulnerable to outside influence. Notice that the SPECs which seem most obviously to be "vulnerable" in this way are those of the nonlexical categories I and C. As we will show, this follows naturally from a theory employing generalized X-bar theory in which only lexical phrases, but not functional phrases, are barriers to government.

Generalizing X-bar theory to all elements once thought of as SPECs makes available more SPECs of nonlexical categories in the essential architechture of phrase structure. In fact, such "extra structure" might be an argument against generalizing X-bar, until it is noticed that such SPECs (e.g. SPECs of CP and AxP) do seem to be interesting candidates for landing site positions. Independently, Barriers theory has recast "wh-movement" and "NP-movement," both as movement to the SPEC of a nonlexical category. Indeed, it seems peculiar to come to the view that wh-movement is a type of substitution, as regards its landing site in COMP, but that "along the way," adjunction to VP (and perhaps other phrases) is also necessary. Generalizing X-bar theory supplies a new position in our analysis--SPEC of AxP--which may serve the purpose of VP-adjunction. Then, we do not have to explain why "wh-movement" involves both substitution and adjunction, nor why it employs VP- but not IP-adjunction. In fact, we may wonder whether there is any need for S-structure adjunction at all.

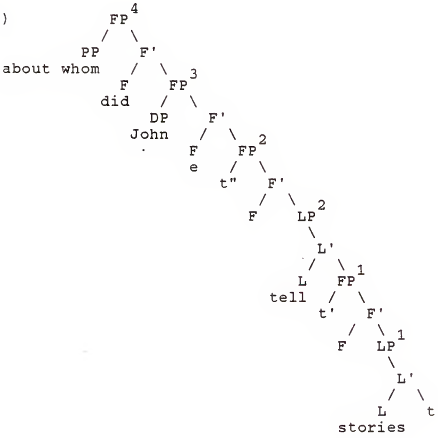
Assume that in (58), movement takes place via SPECs of nonlexical categories. Generally, there is only one landing site in each nonlexical phrase, because each phrase has only one SPEC, given the definition in (57).[12]

(57) Y is a SPEC if it is a nonhead immediately dominated by X-max.

(58) [$_{PP}$ about whom] did [$_{IP}$ John [$_{VP'}$ t" [$_{VP}$ tell [$_{DP}$ t' [$_{NP}$ stories t]]]]]

In abstract form, from the point of view of the lexical/nonlexical distinction alone, such a movement can be represented as (59).

(59)



Consider the relation between t' and t, assuming t' must antecedent govern t. LP^1 is not L-marked; it should be a barrier by the standard theory. If LP is not maximal, however, then LP^1 does not exclude t', and t' can govern t.

Observe the relevant XP nodes crossed between t" and t'. FP^1 must not be a barrier, because it surely excludes t". And FP^1 _is_ L-marked, so it is not supposed to be a(n inherent) barrier. LP^1 may or may not be a barrier - even if it is, it does not exclude t", if LP is nonmaximal. It seems that the notion that LP is nonmaximal may be useful if we are to employ the concept of "exclusion" in our theory of barriers (see Chapter Six).

Lastly, regarding the relation between _about which men_ and t", again FP^2 should not be a barrier, for it excludes the position occupied by the _wh_-phrase, as does FP^3, assuming FPs are "true" maximal projections. Both FP^2 and FP^3, however, are not L-marked, and by the basic notions expressed in Barriers theory can only be nonbarriers by stipulation.

What we find is that the basic notion that non-L-marked phrases are barriers seems to make some sort of sense, in that lexical phrases are (presumably always) not L-marked. But both AxP and IP must be seen as "defective," if Barriers theory is to be successfully adapted to this phrase structure system with little modification. That is, assuming AxP is not theta-marked at all, it is not L-marked, but there is little reason to suppose it is a barrier.

Similarly, IP, whether theta-marked or not, is governed by a nonlexical head C (if at all), and is also not L-marked. Under a theory in which phrases which are not L-marked are barriers, it must be stipulated that AxP and IP are exceptions, following current assumptions.

A more serious problem lies with the "inheritance" of barrierhood. Since all LPs are BCs, the FPs immediately dominating them should inherit barrierhood. Thus FP^1 should inherit barrierhood, for elements dominated by LP^1, from LP^1. The same is true of FP^2 and FP^3, which immediately dominate BCs. We might sidestep part of this problem by modifying our notion of "immediately dominate," so that it ignores not only F', but also LP - that is, any nonmaximal projection. Then, if PP is an FP, FP^1 might inherit barrierhood from it, but FP^1 is L-marked and not a BC, so FP^2 cannot inherit barrierhood from it. But FP^2 is a BC and should be an inherent barrier, and FP^3 should be able to inherit barrierhood from it. (If PP is an LP, FP^1 would have no FP in the S-structure to inherit barrierhoood from, though in the D-structure, the DP complement of P is L-marked and not a BC, so FP^1 could not inherit barrierhood from it.) In short, the concept of inheritance of barrierhood encounters obstacles in this system, though that of inherent barrier fares a little better (the exceptions being IP and AxP).

Generalizing X-bar theory changes the architecture of basic syntactic structure, altering the status of particular constituents with respect to whether they are L-marked or not. This is precisely one reason why the "DP hypothesis" and other attempts to broaden the scope of X-bar theory have interesting consequences for a theory of barriers which relies on some notion of "L-marking." In this system, we find some necessity, existent in the standard Barriers theory for IP, to disregard the L-markedness of FPs, to see them as nonbarriers in any situation. Since all LPs are apparently "closed off" by FPs, they are all non-L-marked and inherent barriers. FPs, however, appear not to be barriers, whether they are L-marked or not. It may turn out, then, that the stipulation that IP (and in our system so far, AxP) are not barriers should be expanded into the principle that no FP is a barrier.

Is the problem of incompatibility of standard Barriers theory and "generalized X-bar theory" an indication that the latter should not hold? To defend the idea that this incompatibility is not a sign that generalized X-bar theory should be discarded in this form, we need to look once again but a bit further into Barriers theory on its own.

2.5 Problems with Standard Barriers Theory

Recall the relative clause "complex noun phrase," exhibited in (60).

(60) *what did $[_{IP*}$ John $[_{VP'*}$ t" $[_{VP*}$ meet $[_{NP}$ a man $[_{CP}$ who $[_{IP}$ $[_{VP'}$ t' $[_{VP}$ fixed t]]]]]]]]

The illicit relation is supposed to be that between t" and t': CP is an inherent barrier because it is not theta-marked, therefore not L-marked, and it inherits barrierhood for elements dominated by IP from IP as well. NP inherits barrierhood from CP, a BC. But remember, too, that nonarguments can be adjoined to. The relevant S-structure should be derivable, given movement through adjunction to CP. (The traces can also be deleted, removing any possible ECP violation.)

(60') *what did $[_{IP*}$ John $[_{VP'*}$ t^4 $[_{VP*}$ meet $[_{NP}$ a man $[_{CP'}$ t^3 $[_{CP}$ who
$[_{IP}$ $[_{VP'}$ t^2 $[_{VP}$ fixed t^1]]]]]]]]

CP may be a barrier, but it does not exclude t^3, nor does it dominate t^3, so it cannot block government of movement involving t^2 and t^3 or t^3 and t^4. NP inherits barrierhood for elements that CP dominates from CP, but CP does not dominate t^3, so NP does not inherit barrierhood for t^3. (60') is neither blocked by subjacency nor ruled out by the ECP, except perhaps by Minimality, which would mean that relative clause "complex noun phrases" are no different from noun-complement ones. The same can be said, of course, for (61), which is claimed to be a more serious violation involving the ECP.

(61) *how did $[_{IP*}$ John $[_{VP'*}$ t^4 $[_{VP*}$ meet $[_{NP}$ a man $[_{CP'}$ t^3 $[_{CP}$ who
$[_{IP}$ $[_{VP'}$ t^2 $[_{VP}$ fixed the car t^1]]]]]]]]

Consider (62), in which all traces appear to be properly governed and movement is not blocked, though the structure is ungrammatical.

(62) *how did [$_{IP*}$ John [$_{VP'*}$ t^4 [$_{VP*}$ leave [$_{PP'}$ t^3 [$_{PP}$ before
[$_{XP}$ PRO [$_{VP'}$ t^2 [$_{VP}$ fixing the car t^1]]]]]]]

In other words, if adjunction is possible to nonarguments, the "adjunct condition" can be overridden. Barriers as defined in Barriers theory turn out to be relevant only for phrases which are theta-marked, but not by a lexical category, most notably subjects.

Chomsky (1986b:20) suggests, incidentally, that VP receives a theta-role from I, since the trace of VP-fronting must be properly governed, but VP-fronting can cross one barrier.

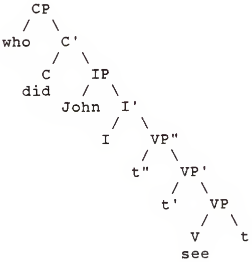
(63) [$_{VP}$ fix the car], [$_{IP*}$ I [$_{VP'}$ t' [$_{VP}$ wonder [$_{CP}$ whether
[$_{IP}$ he will t]]]]]

If VP is then an "argument," it should not be adjoined to. Remember that Chomsky, following an idea of Kyle Johnson's, claims that adjunction segments a phrase, causing it to be "invisible" to theta-marking, to account for the hypothesis that there is no adjunction to arguments. The same should hold for VP-adjunction. In fact, I think it could be applied to nonarguments--the same intuition might cause us to think adjunction would make a phrase "invisible" in the determination of grammatical function in general, supplying a conceptual argument against any "segmentation-adjunction" (at least before such grammatical functions are determined).

Bouchard (1987) has pointed out another interesting problem with adjunction, that without stipulation, it should be able to occur an infinite number of times. Consider (64), in which adjunction has applied twice.

(64) a. who did John see

b.



In (64), t' m-commands t; the maximal projections which dominate t' (IP and CP) also dominate t. The trace t does not m-command t', however, because t is dominated by a maximal projection, VP, which does not dominate t'. That is, t is the only trace in (64b) which is dominated by VP, since it is dominated by all segments of VP. Since t' and t" are dominated by exactly the same maximal projections, IP and CP, t' and t" m-command each other. This means that who should have only bounding restrictions on the distance that it moves, since t" is properly antecedent-governed by t'.

Further, Bouchard (1987) has noted that the notion of "barrier" in Barriers theory is dependent on the concept of BC, which has no other discernible use.

Of course, there are rather obvious problems, such as the "defective" nature of IP and I', which is stipulated but so far unexplained. Also, Chomsky inherits a problem with the Lasnik-Saito theory, that gamma-marking is split up for arguments and adjuncts, and that "in-between," some traces can be deleted, a fairly powerful mechanism in itself. Why, for example, should traces of A-positions be allowed to delete? In fact, since they are not needed to satisfy the ECP in the first place, why should they have to wait to delete until after gamma-marking of arguments--their presence is only needed for bounding theory.

It seems to me that part of what the ECP tries to express is provided for already by theta-theory. That is, it is no accident that the ONLY traces which appear to be properly governed by virtue of theta-government are those in theta-governed A-positions. The requirement that A-position traces must be theta-governed might be seen as part of a more general requirement that all "source" traces must be in positions which are assigned some "theta-function," be it that of "argument" or "modifier." If so, then perhaps antecedent-government is required for all traces, so that it is not unnatural that the first trace of an argument in wh-movement is in fact properly antecedent-governed by a trace adjoined to (or in the SPEC of) its phrase; by this conception, theta-governed traces simply fall in line with non-theta-governed ones in this respect.

Chomsky (1986b) has also argued that theta-government may not be sufficient for proper government of argument traces.

(65) *a man seems [there to be killed t]

If (65) is an ECP violation, then the trace t must not be properly governed, even though it is theta-governed by kill (pp. 76ff).

2.6 Summary

The version of generalized X-bar theory which we will pursue consists of the two basic claims in (66=).

(66) a. X-bar theory holds of nonlexical as well as lexical heads.
b. Any LP must be the complement of an F.

To this we have added the theory of "free projection," which strictly observes progressive bar-numbering and seems to best accommodate the ability of a head to have a theoretically infinite number of possible sisters, at the same time observing a restrictive version of X-bar theory with a broad range of application.

Also, we will proceed with the hypothesis that all XPs are "truly maximal." Not only is this the most "conservative" hypothesis, but it also shows promise in accounting for binding phenomena within noun phrases, and fits in well with the hypothesis (67).

(67) LPs are barriers, in some sense to be defined, while FPs are not.

We have sketched various proposals concerning the lexical-nonlexical distinction. As we attempt to make this distinction more explicit, our goals will include accounting in some way for (68) as well as (67).

(68) a. Dummy positions are Fs or sisters to some F, because FPs lack "referential content."

b. Movement can only be to a dummy position.

As (68) is relevant to the theory of movement, we may be able to maintain the generalization in (69).

(69) (At least) the core cases of movement (i.e. wh-movement and DP-movement) involve substitution alone.

Some version of Barriers theory may be compatible with generalized X-bar theory, but the standard theory (Chomsky, 1986b) does not accommodate it well in any obvious way. It does seem, however, that "L-marking" still gains some support, since LPs, which we argue to be barriers (67), are always "F-marked" (66b). But some FPs (AxP and IP) which are apparently not L-marked do not seem to be barriers. Thus, we will explore (67), although there is reason to believe that "L-marking" is also relevant, as we will see.

A significant area of incompatibility for the two theories seems to be the notion of inheritance of barrierhood. Therefore, we refrain from developing this idea, focusing on inherent barrierhood.

We have found some problems with standard Barriers theory which might be alleviated by adopting generalized X-bar theory. We have discussed various aspects of the theory of adjunction which are in conflict with other principles. It may be that generalized X-bar theory can provide "core" positions which essentially perform the tasks of adjunction in standard Barriers theory, replacing it and thus avoiding various problems of restrictiveness, generality, consistency, and observational adequacy which arise in current theories making use of adjunction.

The essence of the proposal we intend to explore is that generalized X-bar theory may provide positions essential for facilitating movement and government "across" barriers.

2.7 Notes

[1] There are various analyses of the genitive DP's within the DP hypothesis. The representation in (2) is Abney's (1987) analysis. Another possibility, discussed and rejected by Abney (1987:79-85) and attributed to Richard Larson, is that the genitive DP is in the SPEC of DP, as in (2), but the Case-marking _'s_ is in the head of the DP in (2). We will develop a different position in Chapter Two, but will assume Abney's analysis (2) for now.

[2] Chomsky apparently changed his view of P ("adposition") in Barriers theory, there including it among the "lexical categories" NP, AP, and VP. In Barriers theory, CP and IP

are the only nonlexical categories (among the six discussed: NP, AP, VP, PP, IP, and CP.

[3] Chomsky claims that X* in (7a) and (7b) is "subject" and "object," respectively when X* = NP (p. 3). It is not clear, however, that clausal complements are not also "objects," and it may also be that "sentential subjects" are true clausal subjects. (For differing views concerning the status of such structures, see Koster, 1978a and Delahunty, 1983, for example.) Also, there are some situations in which adjective phrases and adpositional phrases are "subjects," at least when the verb is be.

(i) to Alaska is a long way
(ii) hungry is what I am

It thus seems plausible that any XP can be a subject, and in fact this is what we might expect: Any XP can be a subject as long as it is interpretable as a subject.

[4] In fact, I believe this departure is unfortunate. It might make more sense to say that the X' is present if a SPEC is present, but absent if a SPEC is not present, along the lines of the theory of "free projection" (Bouchard, 1979), as we will discuss in Chapter Three within the theory presented there. But allowing extra structure when there is no SPEC opens the door to having all sorts of intermediate structure possible even when no elements are present to justify their presence; for example, if we assumed that modifiers were adjoined we could have multiple adjunctions even when such modifiers are not present, etc. Further (10) is introduced basically so that X' will not be there to block government under Minimality, but this predicts that Minimality should always hold when a SPEC is present. But the presence of a SPEC (in traditional X-bar analyses) does not necessarily have a drastic effect on proper antecedent-government.

(i) John was almost certain to win
(ii) John has been killed
(iii) who had John been talking to

[5] If YP dominates itself, however, then both YP and ZP dominate YP and MP. Then MP would m-command YP. Also, Z would m-command YP, but YP would not m-command Z. We will not attempt to flush out the consequences of this possibility, but will simply assume that a node does not dominate itself.

[6] The notion that [e], but not that lacks features creates a problem for the analysis in Lasnik and Saito (1984), as Denis Bouchard (p.c.) has pointed out, because that in English is claimed to be deletable when it has no features. Thus that is just as contentless as [e] for purposes of determining when deletion can occur, but that has "more content" than [e] where Minimality is concerned.

[7] Structures such as (37) have also been said to violate a more "perceptual" principle which bars "crossing" (nested dependencies; see Fodor, 1978; Engdahl, 1982). From the point of view of grammmatical principles alone, (37) is only a weak violation.

[8] As we shall see in Chapter Three, and as Rizzi (1978, 1982) has shown, it cannot be claimed that all extraction out of subjects is barred.

[9] These may not be phrase structure properties, however, as many have pointed out (cf. Jackendoff, 1977, Fiengo, 1977, etc.), since their fixed position may be linked to their scope properties, and since stacking is often ruled out for reasons apparently associated with "semantic conflict." Abney's point about stacking, however, seems to be that those a hundred nights should be just as grammatical as those many nights, those one hundred nights, since they have similar semantic properties.

[10] As Bouchard (p.c.) has pointed out, however, this is hardly a conservative hypothesis. If the difference in manner of projection is learned, what evidence is there in the learner's linguistic data that would convey this difference? Or, if it is some universal innate principle, why should it be, and where is any real motivation for its existence? The argument from "open- and closedness" is not particularly strong, since the apparent lack (or perhaps rarity) of modifiers of nonlexical heads may be explained by their lack of interpretability in many cases. Further, there may be some advantages to saying that functional heads may be modified, since it might provide a structural way to differentiate kinds of modifiers. It is well known, for example, that temporal and locative modifiers are easier to extract than manner modifiers - perhaps this has something to do with whether they are modifiers of lexical or functional heads. We leave this possibility unexplored here, however.

[11] If NP dominates itself, then N and DP in (54) do m-command NP. However, we assume that a node does not dominate itself (see note 5).

[12] Notice that the PP about them would be both the SPEC and the complement in information about them. It is not clear, however, that this presents any problem. It is not even clear that "SPEC" is relevant for LPs in our system. If relations of c-command correspond to relations of scope, this can be done without reference to the notion of "SPEC." Notice also that if an F has only a complement and no separate SPEC, that (LP or FP) complement is also the SPEC. Here SPECs are relevant, but it is not clear that the "double duty" of the complement matters, since it would still be a filled SPEC.

CHAPTER 3
A THEORY OF BARRIERS TO MOVEMENT AND GOVERNMENT

The basic question that we will explore is whether phrases are inherent barriers by virtue of whether and how they are theta-marked, or because of their essential characteristics as lexical or nonlexical phrases, or both.

3.1 Free X-bar Theory

Standard X-bar theory assumes two levels of projection for a given head X, with specifier and complement positions available at Y and Z, respectively (see 1.2).

(1)

```
        X"
       / \
      Y   X'
         / \
        X   Z
```

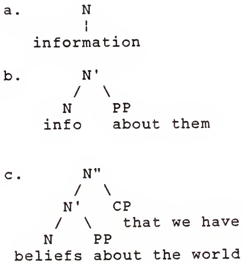
The category and number of Zs are constrained by the subcategorization frame[1] for X. It is generally assumed, on the other hand, that there is only one Y (SPEC). Exactly how to deal with modifiers remains an open question in standard theory, though a number of linguists (Baker, Hornstein and Lightfoot, Fukui) have argued that modifiers are base-adjoined.

We depart from traditional assumptions in claiming that certain elements thought to be specifiers of NP, VP, etc. are actually functional heads which subcategorize for NP, VP, etc., expanding on the work of Hale, Fukui, Hellan, Speas, Abney, and many others. It seems questionable to claim that this version of generalized X-bar theory holds for all languages. We speculate that the existence and complexity of overt (S-structure) movement is tied to the existence and complexity of a system of "functional categories," such as D, I, Aux, C, etc. Whether this is in fact the case remains to be explored (cf. Chapter Six for some discussion). We will attempt to sharpen the distinction between "lexical phrases" (NP, VP, AP (...)) and "functional phrases" (DP, AuxP, CP (...)).

Further, we will explore the idea that it is unnecessary to stipulate the number of levels of projection possible for a given head (Bouchard, 1979), and adopt the hypothesis that syntactic trees are binary-branching (Bouchard, 1979, 1984; Kayne, 1981b), so that there is only one Z in (1), and only one Y. To accommodate elements which are neither "direct objects" nor "specifiers," we will assume that there is a theoretically infinite number of possible intermediate levels of projection, and, further, that there is no need to determine which of these intermediate levels might hold "modifiers" or "arguments" (or perhaps some other kind of element)--this can be determined by theta-theory, since only "arguments" are theta-marked.

The theory of phrase structure we are developing basically draws on Bouchard's (1979) idea of "free projection." There is no stipulated maximal level of projections in this theory (cf. Muysken, 1982 for a summary of then current claims regarding the maximal level). Rather, a complex phrase consists of a series of binary relations, and "X^{max}" is the highest level of X^n that the head projects to. In this sense, the only structure that is there is that which is needed to pair the categories realized in the phrase. For example, there is only an N-one-bar node if N has a complement, modifier, and/or specifier; otherwise, N^{max} is N^0. If N has three satellites, there are three levels of N-projection.

(2)



N^{max} is N^0, N^1, and N^2 in (2a), (2b), and (2c), respectively. We will claim that the "SPEC" of a phrase is that nonhead element which is immediately dominated by X-max (see (2.4(57)). Any nonspecifier elements are "complements" in a broad sense; they can be arguments (and?)/or modifiers. "Modifiers" are sisters to a head which assigns them some "theta-function" which is not a "theta-role," perhaps a "theta-identification" (Higginbotham, 1983, 1985; Sproat, 1985). Whether modifiers are found in a given category of phrase depends on whether they would be assigned a plausible semantic interpretation. For example, it seems clear from a conceptual standpoint that nouns, verbs, adjectives, and clauses, at least, all have modifiers, but it is not at all clear that complementizers, determiners, and auxiliaries do (see Ch.1:n.10).

As stated above, we will make the suggested distinction between lexical phrases (LPs) and functional phrases (FPs). LPs are proposed to be distinct from FPs in various fundamental ways. One is that LPs (and their heads) have "descriptive content" (Hale, 1983); they appear to be more directly associated with notions of objects, events, attributes, etc., in a way in which FPs are not. In this sense, LPs are more "referential." FPs appear to have to borrow such "descriptive content" from the LPs in their complements. At the same time, however, it is the FPs which are syntactically assigned some "theta-function" as sisters to some head, and these "syntactic meanings" are apparently shared with their LP complements.

LPs appear to be the domain in which "core" semantic relations are determined. Notice, for example, that "direct" theta-marking (Chomsky, 1981b) takes place only when an element is a sister to some L. Fukui (1986) proposes that modifiers are also satellites to L. We may take this a step further and claim that a lexical head must assign some "theta-function" to its sisters. Then satellites of LPs must have some semantic function, as "argument or modifier." If not only heads but also satellites of LPs must have "content," then no position that is sister to L can be a true dummy position or, thus, a suitable landing site.

This may follow essentially from an extended view of the Projection Principle (Chomsky 1981b, 1982, etc.), extended in that it acknowledges the "semantic fullness" of positions which are assigned some "modifying function" Thus, it seems plausible to claim that movement can involve neither "theta-positions" nor non-theta-positions "with content," i.e. "modifier-positions." Rather, landing sites must be "dummy positions" necessarily lacking such "theta-function content." In this view, the possible constituents in an LP would be strictly determined by the Projection Principle.

From at least a superficial standpoint, Fs and their satellites may or may not have "content" in either sense, i.e. relatively easily determined theta-functions or "referential meanings." Thus, in English INFL, presumably an F head, is generally "semantically empty," but modals could be claimed to be instances of I with more "inherent meaning." Let us for now suppose that "subjects" of IP and DP are base-generated in their SPECs (following Abney, 1987); these are arguments and thus generally have theta-function content; still, some subjects of IP can have no theta-function, it is claimed, and are thus open landing sites for "DP-movement." Various other "functional elements found in FPs, whether satellite or head, seem to have have no clear "theta-function" as argument or modifier, e.g demonstratives, articles, auxiliaries, degree words, etc.

Since FP apparently "borrows" descriptive content from "its" complement LP, F must be obligatorily transitive. Thus, an FP's complement must have inherent content i.e. "referential" properties. The only category which appears to be an F subcategorizing for an FP is I, which selects AxP. Otherwise, the relation between F and LP seems fairly straightforward. Notice that the F does not appear to assign some "theta-function" to it the way an L assigns a theta-role or a "modifier role" to its complements. Thus it seems that the possible complements in an FP are not directly constrained by the Projection Principle. However, possible complements of F do appear to be strictly determined by subcategorization theory. That is, an F must subcategorize for some "complement," but not for the same kind of reason that certain Ls require various FP complements. Regardless of this distinction, all complement positions are non-dummy positions; when a complement position is present, it is "semantically full."

This extended view of the Projection Principle affects movement by disallowing the use of any position which is "semantically full" (having theta-function or descriptive content) as a landing site. Since the complement of F is obligatory, that position can never be empty and is thus never a landing site. Heads and SPECs of FPs, in the other hand, can be "dummy positions," i.e. landing sites for movement.

It was stated earlier, however, that the theory of free projection allowed only the structure called upon by the elements that were present. That is, if only a head appears, that head is also the maximal projection, and if a head has ten satellites it will have ten projections, i.e. ten categories, each of which represents a set of relations between the two categories of which it is composed. Then, suppose we want to extract *who* out of *a story about who*. In *a story about who*, there seems to be evidence of only one relation between two "immediate constituents" in this DP, *a* (D) and *story about who* (NP). If so, the head has only one satellite, and there is only one projection of D (D').

```
(3)  a.       D'
             / \
            D   NP
            a   story about who
```

b. who did you hear a story about

We will be claiming, however, that the *wh*-expression moves out of DP in (3b) via the SPEC of DP. How can there be a SPEC in DP to serve as a landing site if D only projects to D' in (3a)? We must claim that "dummy elements" are "fully visible" for purposes of tree construction. If they are present, they are "real satellites." Thus, if a dummy SPEC is present in *a story about who*, there are two projections of D (D"). If such a dummy SPEC is absent, then there is the one projection of D (D'), and a dummy landing site in DP is unavailable for extraction, by our claims. Now, it remains to determine exactly when such dummy elements are introduced, an important but complicated question which we will come back to again and again.

A fairly explicit X-bar theory has been proposed here, which is capable of handling "subjects across categories," as SPECs of IP, DP, DgP, etc., as well as the infinite capacity for "modification," provided for by the theory of free projection. That there appears to be only one SPEC for a phrase can be accounted for by the definition of SPEC as the nonhead immediately dominated by X^{max} and by the binary branching hypothesis. This helps to restrict possible dummy positions/landing sites for movement in a fairly explicit way.

A number of principles interact to provide for dummy positions at D-structure. X-bar theory and the lexical/functional distinction, in conjunction with the Projection Principle, (and its relevance for the Projection Principle) may interact to allow for the possibility of dummy positions. The theory of free projection, on the other hand, does not provide easily for empty SPECs the way that a theory such as Chomsky's has. That is, if we stipulate that X^{max} is X", and there is no phonologically realized SPEC, an empty SPEC is predicted, but if the level of X^{max} is not stipulated, dummy SPEC positions cannot fall out of the X-bar system the way that dummy heads can. This leads us to search for "outside influences" which might serve to license "empty" SPECs available as landing sites for wh-movement. We will thus continue to consider the question of how such "externally motivated" dummy positions at D-structure arise.

The lexical/functional distinction may be relevant in determining what are possible landing sites for movement. Thus, we will be exploring the idea that landing sites for at least the general instances of movement (i.e. "wh-movement" and "DP-movement") must be heads or SPECs of FPs. In addition, the distinction may be crucial in the theory of barriers, as we will propose, forming the basis for differentiation of types of barriers for movement.

3.2 Bounding Theory

Generalizing X-bar theory in the manner described in Chapter One, following Chomsky (1986b), Abney (1987), and others, recasts the major cases of movement as involving the SPECs of nonlexical phrases, such as CP, IP, and (see Abney, 1987) possibly DP. We take this as evidence of the generalization that only positions in FPs are possible landing sites for movement.[2] This restriction follows from theta-theory, as we have elaborated it to accommodate "modifiers" as well as arguments. Further, movement to the complement of F is impossible since it is assumed that an element cannot be moved into a position which is already filled.

If movement employs only positions without content as landing sites, then in any movement out of LP, the LP must be crossed "completely;" its SPEC (if SPEC is even relevant for LP; cf. Ch.2 n.12) cannot be used. Now, suppose we accept the standard view that *wh*-movement does not employ any landing sites that are sisters to I (a claim corresponding to the Barriers theory proposal that *wh*-movement cannot involve adjunction to IP, to be modified in Chapter Five); in our system, movement proceeds from the SPEC of AxP directly to that of CP, in (4), for example.

(4) what did $[_{IP}$ John $[_{AxP}$ t' $[_{VP}$ see t]]]

Then IP (assumed here to be an FP) can also be extracted out of "completely," as VP (an LP) is in (4). Similarly, the SPEC of CP is unavailable in (5), and this FP is completely "skipped." In (6), however, the SPEC of CP is employed, and this FP is extracted out of in a special way presumably disallowed (by the Projection Principle) when crossing LPs.

(5) what did John wonder $[_{CP}$ when $[_{IP}$ PRO to $[_{AxP}$ t' $[_{VP}$ fix t]]]]

(6) what did John say $[_{CP}$ t" that $[_{IP}$ Mary had $[_{AxP}$ t' $[_{VP}$ fixed t]]]]

This special way in which FPs, but not LPs, can be crossed will be called "bridging;" LPs must be "skipped." The basis for the distinction between skipping and bridging lies in theta-theory and the lexical/functional distinction; only FPs can have heads or SPECs without "content" at D-structure. Therefore, only FPs can be "bridged."

(7) An element x bridges a phrasal node z if it moves out of z via an immediate constituent dummy position of z; if it moves out of z in any other way, z is "skipped."

In (4), repeated below, VP is skipped, then AxP is bridged, and then IP is skipped.

(4) what did [$_{IP}$ John [$_{AxP}$ t' [$_{VP}$ see t]]]

A node can be "skipped" in two slightly different situations. IP is skipped in (4) presumably because John fills the SPEC of IP. In (8), IP is skipped because the SPEC of IP is the source position for the movement and is therefore not a dummy position.

(8) who did John believe [$_{IP}$ t to be intelligent]

It appears that skipping some FPs may result in ungrammatical structures. Consider the sentences in (9) as opposed to the grammatical ones in (10).

(9) a. *who did John believe [$_{DP}$ the claim that Mary saw]
b. *who did John believe [$_{DP}$ Mary's claim to have seen]
c. *what did John have [$_{DP}$ a belief that Bill would do]

(10) a. what did John have [a plan to do]
b. what did John have [an urge to say]
c. what did John have $[_{DP}$ the courage to confront]

Suppose that the SPEC of DP is unavailable when the DP is "specific" (see Engdahl, 1980, 1982; Chomsky, 1986b, etc., and Chapter Four) in some sense to be defined, so that DP must be skipped in (9), but can be bridged in (10). Skipping DP in (9) entails skipping two LPs, NP and then VP (11a), but bridging DP allows only one LP to be skipped at a time (11b).

(11) a. *what did John $[_{VP}$ have $[_{DP}$ ... $[_{NP}$ plan to do t]]]

b. what did John $[_{VP}$ have $[_{DP}$ t' a $[_{NP}$ plan to do t]]]

Thus, we propose (12) as a principle of bounding theory.

(12) In any single application of "move alpha,"
one and only one LP can be crossed/skipped.

Weak wh-island effects do not involve such a strong violation. In (13), for example, assuming whether undergoes (string-vacuous) wh-movement, CP* is skipped.[3]

(13) who did $[_{IP*}$ John $[_{AxP'}$ t" $[_{VP'}$ wonder $[_{CP*}$ whether $[_{IP'}$ PRO to

$[_{AxP}$ t' $[_{VP}$ consider $[_{IP}$ t to be intelligent]]]]]]]

The intermediate trace t' prevents (12) from being violated; first VP is skipped, and then VP' is skipped. The structure is marginal at worst, suggesting that some other type of barrier - but only one such barrier - is involved, the most apparent candidate being CP*. This is supported by the abrupt worsening of similar constructions with two such CPs skipped, as in (14), the "double wh-island violation" (Rizzi, 1982; Chomsky, 1986b), in spite of the fact that only one LP is skipped at a time.

(14) *who did $[_{IP''}$ John $[_{AxP''}$ t^{3} $[_{VP''}$ wonder $[_{CP'}$ who $[_{IP'}$ e
$[_{AxP'}$ t" $[_{VP'}$ said $[_{CP}$ who $[_{IP}$ e $[_{AxP}$ t' $[_{VP}$ saw t]]]]]]]]]]

By Rizzi's (1978, 1982) claims, the ungrammaticality of (14) has nothing to do with the "double WH;" (14) is ungrammatical because CP' is skipped, and by Rizzi's analysis no CP', CP", etc. can be skipped; only the most embedded "S-bar" can be skipped. In (3.3) we will attempt to show that this conclusion is untenable.

More generally, we will claim that certain FPs, such as DP and CP, are "FPs with content," since they can potentially be assigned theta-roles, and, we also claim, must be assigned some theta-function, as "argument or modifier." Such "CFP-barriers" will also be discussed further in our comparison of English and Italian in (3.3).

The distinction between FPs and LPs is crucial for this theory, in various ways. In a commonsense fashion, "barriers" are considered to be "phrasal nodes with content." LPs have "inherent" (notional, referential) content, while certain FPs may be "assigned" theta-function content under the sisterhood condition. We will attempt to show that the two types of "XPs with content" are treated as separate barriers, and that some of the details of their treatment may be parametrized. "Standard English," for example, permits one LP to be skipped at a time, but no FPs-with-content ("CFPs") can be skipped. In Italian, however, it appears that one (and only one) CFP can be skipped. CFPs and LPs thus appear to be distinguished as two different types of barriers.

3.3 The "S/S-bar parameter"

It is well known that "Italian-languages" permit extraction out of some *wh*-islands (Rizzi, 1978, 1982, Chomsky, 1981b, etc.). The Italian examples are from Rizzi (1982), Chapter 2.

(15) Tuo fratello, a cui mi domando che storie
abbiano raccontato, ... (= Rizzi's (6b))

your brother [$_{\text{CP}'}$ to whom [$_{\text{IP}'}$ I [$_{\text{AxP}'}$ t" [$_{\text{VP}'}$ wonder [$_{\text{CP}*}$ which
stories [$_{\text{IP}*}$ they [$_{\text{AxP}*}$ t' [$_{\text{VP}*}$ told e t]]]]]]]], ...

The empty category represented by [e] is the trace of *which stories*, which, by our analysis, must be able to move directly to the SPEC of CP* without using the SPEC of AxP* as a landing site, if the bounding principle (12) is correct as it stands. That is, if one and only one LP can be skipped, the SPEC of AxP* must be used in the extraction of *to whom*, since the SPEC of CP* is filled with *which stories*, and there is only one SPEC of CP (see (2.1); i.e. we reject the "double COMP" solution used in Erteschik-Shir, 1973; Reinhart, 1977). Otherwise, movement from the position of t straight to that of t" would skip the two LPs, VP and VP'.

At first glance, we might suppose that the availability of the SPEC of AxP is peculiar to "Italian-languages," not to those which select the "S parameter." If SPEC of AxP (or perhaps the category AxP in general) were unavailable in "(standard) English-languages," movement of *to whom* would be barred in (15) since this would force the skipping of the two VP nodes. Such a parameter would not account for the ungrammaticality of (16), however, in Italian (and the "worseness" of (16) vs. (15) even in standard English).

(16) *Questo incarico, che non so proprio chi possa
avere indovinato a chi affideró, ... = (13b)

this task [$_{CP''}$ E that [$_{IP''}$ I really don't [$_{AxP''}$ t [$_{VP''}$ know

[$_{CP'}$ who [$_{IP'}$ e might [$_{AxP'}$ t" have [$_{VP'}$ guessed [$_{CP*}$ to whom

[$_{IP*}$ I will [$_{AxP*}$ t' [$_{VP*}$ entrust t T]]]]]]]]]]]], ...

The empty [E] is the deleted wh-word which is antecedent to all ts, [e] is the source trace of who now in CP'), and T is the source trace of to whom now in CP*. The availability of the SPEC of AxP sees to it that no more than one VP is skipped at a time. Then the ungrammaticality of (16) cannot be accounted for by appealing to LP-barriers (12). The difference between (15) and (16) seems to be the number of CPs skipped, and CPs are "CFPs," FPs with content. If we hypothesize that these are "barriers" similar to LP-barriers, but treated separately from them, then one CP can be skipped, as in (15), but not two, as in (16) or (17).

(17) *Il mio primo libro, che so a chi credi che abbia dedicato, ... = (18b)

my first book $[_{\text{CP''}}$ which $[_{\text{IP''}}$ I $[_{\text{AxP''}}$ t^3 $[_{\text{VP''}}$ know $[_{\text{CP'}}$ to whom

$[_{\text{IP'}}$ you $[_{\text{AxP'}}$ t" $[_{\text{VP'}}$ believe $[_{\text{CP*}}$ T' that $[_{\text{IP*}}$ I $[_{\text{AxP*}}$ t'

$[_{\text{VP*}}$ dedicated t T]]]]]]]]]]]], ...

We depart here from Rizzi (1978), (1982), where it is claimed that it is impossible to skip any CP which is not the most embedded CP. In addition to (17), Rizzi gives three other examples illustrating this point, including (18), which is similar to (17), in that it can be argued that more than one CFP (here three: CP, CP*, and CP') is skipped, and those in (19), which clearly involve the skipping of only one CFP.

(18) *Gianni, a cui so che cosa ritieni che voglio regalare, ... = (20b)

Gianni, [$_{CP''}$ to whom [$_{IP''}$ I [$_{AxP''}$ t^{4} [$_{VP''}$ know [$_{CP'}$ what

[$_{IP'}$ you [$_{AxP'}$ t^{3} [$_{VP'}$ believe [$_{CP*}$ T" that [$_{IP*}$ I [$_{AxP*}$ t" [$_{VP*}$ want

[$_{CP}$ T' [$_{IP}$ PRO to [$_{AxP}$ t' [$_{VP}$ give T t]]]]]]]]]]]]]]], ...

(19) a. *la machina che mi domando se Mario creda che potra utilizzare ... = (19b)

the car E that [$_{IP''}$ I [$_{AxP''}$ t^{6} [$_{VP''}$ wonder [$_{CP'}$ whether

[$_{IP'}$ Mario [$_{AxP'}$ t^{5} [$_{VP'}$ believes [$_{CP*}$ t^{4} that [$_{IP*}$ he will

[$_{AxP*}$ t^{3} be [$_{VP*}$ allowed [$_{CP}$ t" [$_{IP}$ PRO to [$_{AxP}$ t'[$_{VP}$ use t

]]]]]]]]]]]]]]]...

b. *il tuo libro, che Gianni non si ricorda piu a chi ha detto che ha lasciato sul tavolo, ... = (21b)

your book [$_{CP'}$ E that [$_{IP'}$ Gianni doesn't [$_{VP'}$ t^{4}

[$_{VP'}$ remember anymore [$_{CP*}$ to whom [$_{IP*}$ he [$_{AxP*}$ t^{3} [$_{VP*}$ said

[$_{CP}$ t" that [$_{IP}$ he [$_{AxP}$ t' [$_{VP}$ let t on the table

]]]]]]]]]]]]

In (19a) only CP' is skipped, and, in (19b), only CP*. We will argue, however, that the cases in (19) are different from those in (17) and (18). First, the constructions in (19) are marked because the one CFP is skipped, but they are not as ungrammatical as (17) and (18). Consider the examples in (20), which are difficult to process, "awkward," etc., but do not seem as bad (at least in English) and those in (21).

(20) a. the car, which I wonder whether John believes that he'll be able to use, ...

b. the car, which I wonder how John thinks that he'll be able to use, ...

c. the car, which I wonder who thinks John will be able to use, ...

d. the car, which I wonder who persuaded John that he'll be able to use, ...

e. the car, which I wonder who was persuaded that John would be able to use, ...

f. the car, which I wonder who John persuaded that he should be able to use, ...

(21) a. the car, which I wonder to whom John believes that I gave

b. the car, which I wonder how John thinks that he'll be able to use t (= (23b))

c. the car, which I wonder who John thinks would be able to use

d. the car, which I wonder who John thinks persuaded him to use

e. the car, which I wonder who John thought seemed to have been persuaded to use

In (20), one "higher" CFP is skipped, and the structures are marked, and perhaps even vary in certain respects among themselves, but any of them is more grammatical than those in (21), where both wh-words move from deep in the construction. The wh-word which is not moved the farthest (e.g. to whom in (21a)), employs one or more intermediate SPECs of CP to move to its S-structure position; these very CPs, plus the CP in which this less-long-distance movement "lands," must be skipped during more-long-distance movement (e.g. movement of which in (21a)).

Secondly, it seems that the higher a CFP is skipped, the more difficult the extraction is to process. There may be some perceptual problem involved, aside from bounding principles. Consider the worsening of the constructions in (22).

(22) a. the car, which I wonder who believes John to have used

b. the car, which I wonder who believes that John used

c. the car, which I wonder who claims to believe John to have used

d. the car, which I wonder who believes that John claims that he used

e. the car, which I wonder who explained that John believed he should be allowed to use

f. the car, which I wonder why John explained that he thought he should be able to use

Therefore, I would like to be able to claim that the examples in (17) and (18) on the one hand, and in (19) on the other, are "illicit" for different reasons, that the former are wholly barred by the general bounding principle that more than one CFP cannot be skipped, while the latter are marked with respect to bounding principles, and more difficult to process as the CFP which is skipped is higher (relative to the element moved long-distance) in the construction. (This remains to be tested in Italian.[4]) Thus (23) is grammatical (and relatively "happy" perceptually), since only one CFP (CP) is skipped, and that CFP is the most embedded. (24) should be worse.

(23) a. Il mio primo libro, che credo che tu sappia a chi ho dedicato, mi é sempre stato molto caro. = (18a)

my first book $[_{CP'}$ which $[_{IP'}$ I $[_{AxP'}$ t^4 $[_{VP'}$ believe

$[_{CP*}$ t^3 that $[_{IP*}$ you $[_{AxP*}$ t" $[_{VP*}$ know $[_{CP}$ to whom

$[_{IP}$ I $[_{AxP}$ t' $[_{VP}$ dedicated t T]]]]]]]]]]]] ...

(24) *il mio primo libro, che credo a chi tu sappia che ho dedicato, ...

We propose, then, that Italian treats CFP-barriers as LP-barriers are treated:

(25) During a given extraction, one and only one CFP can be skipped.

Standard English, on the other hand, does not allow any CFP to be skipped. Since English allows the skipping of one and only one LP-barrier, it seems arbitrary that no CFP-barriers can be skipped at all. Perhaps CFPs and LPs are to be unified, as "Barriers" in a broad sense for English languages. If this is plausible, (23) is ruled out, for example, because two Barriers (VP and CP) are skipped in one iteration of movement.

This predicts, however, that extraction out of subjects should be easier in English, since subjects are not dominated by any LP (by current analyses) and thus at most only one Barrier could be skipped. However, (26) is ungrammatical in English (although grammatical in Italian; see (32)).

(26) John, of whom a picture appeared in the newspaper

So it seems that whether or not it is dominated by an LP-barrier, even one (argument) CFP cannot be skipped in English-languages. (We will see in Chapter Four, however, that some CFPs may be skippable in English.)

But notice that LP-barriers and CFP-barriers are inherently different, if we retain the standard assumptions regarding the domain of a movement "cycle," in that restrictions against skipping more than one CFP must involve "scanning" more than one cycle. That is, the restriction against skipping more than one LP holds for each iteration of movement (during an entire extraction, an infinite number of LPs can be skipped in theory...), but limiting (to one) the number of CFPs that can be skipped involves considering the entire movement "as a whole," suggesting that this principle operates as some kind of well-formedness condition at LF. This might account for why the Italian phenomena are marked in spite of the apparent naturalness of (25).

Signs of this restriction against skipping more than one CFP appear in "double wh-violations" in both languages (Rizzi, 1982; Chomsky, 1986b), in which two CPs are skipped during the ("entire") movement.

(27) *what did you wonder who knew who saw (see (14))

Curiously, this violation seems to be lessened somehow when the embedded clause is infinitival (28), which may be related to the relative grammaticality of (29), compared with (27).

(28) *the crime that you knew who believed who to have seen

(29) *the crime that you knew who believed John to have seen

The general analysis presented here can be extended to extractions such as (30) and (31), if we adopt the assumption that certain postnominal PPs (e.g. "genitives") are base-generated in the SPEC of DP.

(30) *Francesca, di cui non so dove tu abbia conosciuto la sorella, ... = (26b)

Francesca [of whom [I don't [t [know [where
CP' IP' AxP' VP' CP*

[you have [t met [the sister t] T]]]]]]]
IP* AxP* DP*

(31) *Gianni, di cui non so su che giornale una foto sia apparsa recentemente, ... = (29b)

Gianni [$_{CP'}$ of whom [$_{IP'}$ I don't [$_{AxP'}$ t [$_{VP'}$ know

[$_{CP*}$ in which newspaper [$_{IP*}$ [$_{DP*}$ a picture t]

[$_{AxP*}$ T' [$_{VP*}$ appeared recently T]]]]]]]]

Thus, we are claiming that DP* is skipped, not bridged; DP* is not crossed via a "dummy position" since the position in which t resides has a theta-role. DP, we argue, is also a CFP; it can receive a theta-role, and perhaps it can be argued that it must receive a theta-function of some sort. Then (30) and (31) are ruled out for the same reason that (16), (17), etc. are barred, because two CFPs (DP* and CP*) are skipped. Extractions out of structures such as (32) and (33), on the other hand, are grammatical in Italian, since only one CFP (DP*) is skipped.[5]

(32) Francesca, di cui so che recentemente hai conosciuto la sorella, ...

Francesca [$_{CP'}$ of whom [$_{IP'}$ I [$_{AxP'}$ t^{3} [$_{VP'}$ know [$_{CP*}$ t" that

[$_{IP*}$ you have recently [$_{AxP*}$ t' [$_{VP*}$ met [$_{DP*}$ the sister t

]]]]]]]]

(33) Gianni, di cui so che una foto e apparsa recentemente ... = (29a)

Gianni [$_{CP'}$ of whom [$_{IP'}$ I [$_{AxP'}$ t" [$_{VP'}$ know [$_{CP*}$ t' that

[$_{IP*}$ [$_{DP*}$ a picture t] appeared recently]]]]], ...

Italian and English differ, we claim, in their ability to skip a single CFP. The situation in Italian is more "marked," perhaps because more demands are made on the principle that two CFPs cannot be skipped; in some sense, this principle does not have to do much work in the unmarked case, since skipping one CFP is barred anyway (even though it may have an effect on judgments concerning "degrees of grammaticality).

More generally, CFPs and LPs are barriers to movement, maybe because they "have content" in some general sense, but they may be different types of barriers because they "have content" in different ways. Here we rely on the lexical/functional distinction to differentiate kinds of barriers. An observational consequence of our theory is that the skipping of one FP may have very different results, from "no violation," to "weak violation," to "strong violations" (of two different kinds, involving LPs or CFPs), depending on the cumulative effect of having to skip that type of FP along with other phrases.

3.4 Obstacles to Bridging

This theory differs from Barriers theory in that possible "barriers" are LP-nodes and CFP-nodes; in general, a primary role is claimed for the lexical or nonlexical nature of certain phrases in determining their barrierhood, at least as far as skipping is concerned. However, "L-marking" may have something to do with why LPs are "LP-barriers," if all LPs are F-marked (i.e. some notion of "not

L-marked" may be indirectly relevant, following Barriers theory).

Categories which receive "theta-function content" are "CFP-barriers," but AxP and IP, if we assume them to be FPs with no theta-role or modifying function themselves, are neither kind of barrier, but simple FPs. This would make it unnecessary to stipulate that IP cannot be an inherent barrier, as Barriers theory must (see (2.2(15)).

However, it is not really clear that IP cannot be some kind of barrier, since IP is the only node that is skipped during (what we are claiming to be) the typical movement from the SPEC of AxP to the SPEC of CP; if it were an LP, only one LP would be skipped during that application of movement, anyway. In fact, by the usual assumptions, IP is "like an LP" in that it is apparently not bridged in wh-movement, perhaps because its SPEC is filled with a subject. But IP is also "like an FP" in that it can apparently be bridged in "DP-movement." We will discuss such DP-movement in Chapter Four.

The question whether there are barriers to bridging leads us to consider the status of certain CFPs. We assume for now that there are no restrictions on bridging the simple FPs, AxP and IP; recall that we have claimed that LPs cannot be bridged. It seems clear that one CFP, namely CP, can be bridged indefinitely, at least under the right conditions. Moreover, the SPEC of DP can apparently be involved in such "unhindered" movements.

(34) what did John t claim [$_{CP}$ t that Mary t said

[$_{CP}$ t that Bill t saw (...) t]]

(35) what did John t claim [$_{CP}$ t that he t had

[$_{DP}$ t a plan [$_{CP}$ t [PRO to improve t]]]

Some CPs cannot be so bridged, even when there is only one of them. For example, the "Sentential Subject Constraint" appears to involve only one CFP (at the relevant cycle), but it is ungrammatical in Italian, just as it is in English. We cannot resort to the "S/S' parameter," then, which in our terms prohibits the skipping of any CFPs in English and of more than one in Italian. So, suppose we allow CP to be bridged, as in (36).

(36) what did [$_{IP'}$ [$_{CP}$ t" that [$_{IP}$ John [$_{AxP}$ t' [$_{VP}$ criticized

t]]]] surprise Mary]

If CP can be bridged, then there is no way to block extraction from a sentential subject. For example, if IPs are CFPs, only one is skipped during each movement, and surely the violation cannot be cumulative, since IP is skipped multiply in (34), (35), (36), and many other examples. If IPs are LPs, again only one is skipped at a time, as permitted. The bridging of this CP must be blocked. Consider (37), modified from Barriers theory.

(37) A CFP can be bridged only if it is "L-marked."

For now, we define "L-marking" along the lines of the basic idea of Barriers theory, roughly as theta-marking by a lexical head; we will modify this concept in Chapter Four. At this point, (37) is stipulative; we will discuss it shortly. Our immediate problem, i.e. to account for the ungrammaticality of extraction from sentential subjects, is still unresolved. That is, even if CP cannot be bridged during such an extraction, so that (38), rather than (36), is the correct representation, some undesirable result must follow from having to skip CP.

(38) what did [$_{IP'}$ [$_{CP}$ that [$_{IP}$ John [$_{AxP}$ t' [$_{VP}$ criticized t]]]] surprise Mary]

In (38), AxP, IP, CP, and IP' are skipped during the same movement. Now, skipping IP and CP gives marginal, but not ungrammatical, results, as we can see from (39).

(39) what did [$_{IP'}$ John [$_{AxP'}$ t" [$_{VP'}$ wonder [$_{CP}$ when [$_{IP}$ PRO to [$_{AxP}$ t' [$_{VP}$ fix t]]]]]]]

The "S/S-bar parameter," in our terms, might treat only CP as a CFP in Italian, where both IP and CP are CFPs (clausal "bounding nodes;" cf. Chomsky, 1981b) in English. But this would mean that three CFPs are skipped in (38) in English (IP, CP, IP'), but only one CFP (CP), in Italian.

Curiously, this type of parameter would work better the other way around, i.e. if IP were a CFP in Italian but not in English; then, at least, the construction would be "ungrammatical" in both languages, though in English it would not be "ungrammatical enough," there being only the one CFP (CP) skipped.

However, if we leave IP as a simple FP, there appears to be no way to block (38) or (40).

(40) to whom did $[_{\text{IP}}$ $[_{\text{DP}}$ your $[_{\text{NP}}$ letter]] get lost]

In our framework, it is not enough to say that "subject phrases" are "islands" because they cannot be bridged; having to skip these phrases must have some "cumulative effect" along with having to skip other phrases. Phrases which are subjects are also CFPs, but the other phrases skipped do not appear to be CFPs. This puts the burden of the violation on these "other nodes skipped," which may include NP (in (40)) and IP.

3.5 The Status of IP

The "subject condition" leads us to investigate whether IP might be an LP after all. If it were an LP, skipping CP in (38) and (40) (repeated below) would force two LPs to be skipped (IP and IP'; and NP and IP, respectively) in one application of movement. We then obtain the Sentential Subject Constraint even for "S-bar parameter" languages, for general reasons.

(38) what did [[that [John [t' [criticized t]]]]
IP' CP IP AxP VP

surprise Mary]

(40) to whom did [[your [letter]] get lost]
IP DP NP

Subject DPs, on the other hand, can be extracted from, as in (33), the translation of which is repeated in (41).

(41) Gianni, of whom [I [t" [know [t' that
IP' AxP VP CP

[[[a picture] t] appeared recently]]]]]
IP DP NP

The moved phrase skips both DP and IP; (41) is grammatical in Italian because only one CFP is skipped in total, and because only one LP is skipped during each iteration of movement. Crucial here is the assumption that *of whom* moves out of a theta-marked position that is sister to D. Having to skip the CFP does not force the skipping of two LPs, as it may in (38) and (40), since NP does not dominate t, and IP is thus the only LP skipped.

Analyzing IP as an LP across the board runs into problems, however, with (39) (repeated below) and (42). These are erroneously predicted to be ungrammatical because more than one LP is skipped in one movement (IP, CP, and VP' in (39); IP and VP' in (42)).

(39) what did [John [t" [wonder [when [PRO
IP' AxP' VP' CP IP

to [t' [fix t]]]]]]]
AxP VP

(42) who did [$_{IP'}$ John [$_{AxP'}$ t' [$_{VP'}$ believe [$_{IP}$ t to be intelligent]]]]

In general, the problem with seeing IP as a barrier of any kind is that "weak wh-island effects" appear unobtainable. Further, any hypothesis concerning the status of IP must take into account the fact that IP as construed in (42) behaves quite differently from nonexceptional CP-IP structures, in that IP in (42) is directly assigned a theta-role. If IP is still a simple FP in (42), then we must relativize the distinction between FP and CFP. An FP is a CFP if in all instances it MUST receive a theta-function; IP is not a CFP is spite of the fact that it is theta-marked in (42) because it is not necessary in all situations to assign a theta-function to IP (as it is necessary in (42)), and since generally an embedded IP is the complement of a C, whose maximal projection is directly assigned the relevant theta-function.

We also encounter a problem of consistency if IP is an LP, since we have claimed in general that LPs do not appear "bare," i.e. they are always (at least in languages which allow movement) complements of nonlexical categories. This problem may be alleviated, however, if we claim that there is no such thing as a "bare IP," as we will in Chapter Four.

It remains to be seen whether it can be maintained that IP is an LP. Notice that even if it is, our arguments must rest on the assumption that AuxP is also there as represented. For, without AxP, movement out of a nonsubject element would skip two LPs, VP and IP, at one time.

(43) who did $[_{IP}$ John $[_{VP}$ see t]]

This section has merely introduced some of the problems which arise when we consider the status of IP. We will take up this issue again as it relates to various issues.

We have attempted a fairly explicit account of the rudiments of *wh*-movement in a theory incorporating "free X-bar theory." A distinction is made between "bridging" and "skipping" a phrase, and we have argued that only FPs can be bridged, i.e. only FPs can have "escape hatches." Whether some phrase can be skipped is another question. One of our basic claims is that only one LP can be skipped "at a time" (12). Thus, skipping one FP may cause a strong violation, not in and of itself, but because it then forces the skipping of two LPs. There do appear to be instances of weaker violations when one FP is skipped, e.g. "weak *wh*-island violations." Here, we have claimed that it is "marked" to skip a "CFP," i.e. an FP with a "theta-function." Italian, some dialects of English, and other languages may be "marked" in this respect. Further, we have proposed that it should be impossible, perhaps in any language, to skip two such CFPs. This is supported by some of the data discussed in Rizzi's work, and seems to hold even in "Standard English" regarding judgments of relative ungrammaticality.

3.6 Government Theory

The major goal of Barriers theory is to unify the domains for government and movement through the concept of "barrier." We will test this idea in our system by adopting the strong working hypothesis that both LPs and CFPs, which we have argued to be barriers to movement, are also barriers to government. Since they appear to behave as separate types of barriers for movement, we might expect them to have different effects on government.

Barriers are relevant not only to constraints on movement itself but also to the relation of government which must hold between heads and the elements they Case-assign, and, by the ECP (2.2(30)), between antecedents and non-theta-governed traces. The more traditional notion of government, as the "influence" or "power" a head has over its dependents, is broadened to include the relation an antecedent has with a trace. Government is then strictly a structural relation between any two categories. The notion that a nonhead can be a governor has been implicit since the development of the notion of "proper government" in Chomsky (1986b) (2.2(27); cf. Bouchard 1984, 1987) since antecedent-government must involve a relation between two XPs, a trace and its antecedent. Any type of X can be a governor, just as any X can be a governee (the latter being commonly assumed).

A basic empirical claim is that the domain for Case-marking is the same as that for antecedent-trace binding; a Case assigner must assign Case to an element, and an antecedent must be able to bind its trace, in essentially the same kind of structural configuration. In the system so far outlined, this would mean that the relations between t' and t and between find and t must lie within some "same domain."

(44) what did $[_{IP}$ John $[_{AxP}$ t' $[_{VP}$ find t $]]]$

The V find governs t fairly easily, since V and t are both inside VP and are sisters. It is more difficult to see how t' might govern t in this system. In Barriers theory, for example, where t' is adjoined to VP, VP is not a barrier from t' because it does not exclude t'; nor is it a barrier for t', because it does not dominate it. In our system, not even a part of VP dominates t'; it is easy to see how VP cannot be a barrier for t', but impossible to maintain that VP is not a barrier from t', under anything like Barriers theory, which employs "exclusion" in the definition of government.

Barriers theory seems to express an intuition here that an antecedent governor cannot lie outside the phrase in which the governee resides. Yet this restriction does not necessarily hold for either antecedent- or head-government, as Chomsky points out: There is evidence from Case phenomena that at least some SPECs are governed by elements not dominated by the maximal projection which immediately dominates the SPEC.

(45) a. John believes [$_{IP}$ Mary to be intelligent]

b. who does [$_{IP*}$ John [$_{AxP}$ t' [$_{VP}$ believe [$_{IP}$ t to be intelligent]]]

In (45a), *believe* governs and assigns Case to *Mary* in the SPEC of IP. This is one reason why Barriers theory rejects the idea that maximal projections alone block government. The grammaticality of (45b) shows that antecedent-government is also not blocked by a maximal projection; both t' and *believe* must govern t, and *who* must be able to govern t'. In fact, it might be noted that once government includes antecedent-government this is generally the case, because antecedent-government at some point has to be able to "ignore" maximal projections, if an (adjunct) element is to ever move out of a phrase.

In Barriers theory, three kinds of barriers can block government of some element Y: 1) an XP which dominates Y that is not L-marked and not IP, 2) a ZP which immediately dominates any non-L-marked XP that dominates Y, and 3) an X' dominating Y which immediately dominates a governor with "features." A barrier is "for Y" if it dominates y and "from x" if no part ("segment") of the barrier dominates x. Following our working assumptions, barriers are LPs and

CFPs. If we want to ensure antecedent government of t by t' in (47), and we assume that LPs are barriers to government as well as movement, we must replace "exclusion" with some other special relation between the barrier (here VP) and the t' in the SPEC of "its" FP (here AuxP). Suppose we try (46).

(46) x governs y if x m-commands y and there is
     no barrier which dominates y and does not
     m-command x.

(47)
```
x ...
      AxP
      /  \
     t'   Ax'
         /  \
       Ax    VP
            /  \
               V'
              /  \
             V    t
```

VP dominates t, but it m-commands t'. Therefore, under (46), t' governs t, and t cannot be governed by any x higher than AxP, because VP would not m-command that x. Also by (46), however, V cannot govern t, because VP does not m-command V, since VP dominates V. In fact, the relations between VP and V on the one hand, and VP and t' on the other, seem to differ in fundamental ways.

(48) a. VP dominates V and does not exclude it;
        VP does not dominate t'.

     b. VP does not m-command (and thus under
        normal assumptions cannot govern) V;
        it m-commands and (probably) governs t'.

If we accept the claims in (48), it seems that one barrier blocks neither movement nor government; more barriers do. Perhaps a governor must be 0- or 1-subjacent to its governee, either on the same side of the barrier as the governee or on the other side of just that barrier. The basic idea here would be "adjacency" (see Chomsky 1986b:30) and in this sense barriers to government would be reduced to barriers to movement. Antecedent-government would be possible only under observance of this adjacency-or-closer requirement.

(49) If (x, x + 1) is a link of a chain, then x + 1 must govern x.

(50) x governs y if x m-commands y and there is no more than one barrier that dominates y but does not dominate x (i.e. if y is subjacent to x).

Such a theory leaves the uninteresting consequence that bounding and government violations amount to the same thing. On the other hand, we might reject (48b) and explore an idea (suggested to me by Denis Bouchard), of removing the requirement that x must not dominate y if it is to m-command y. We will refer to this modified notion of m-command as "M-command."

(51) x M-commands y if every maximal projection which dominates x dominates y.

Then VP M-commands V as well as any trace in AxP, and if this notion of command is relevant for government, one barrier is sufficient to block government, given the right structural conditions.

(52) x governs y if x M-commands y and there is no barrier which dominates y and does not M-command x.

If M-command is the notion relevant for defining barriers to government, both V and t' can govern t in (47), repeated below.

```
(47)    x ...
              AxP
              / \
            t'   Ax'
                 / \
              Ax    VP
                    / \
                       V'
                       / \
                      V   t
```

Thus, even though VP is a barrier "for t" because VP dominates t, it is not a barrier "from" t' or V, since VP M-commands both. Further, since t' and V m/M-command t, they govern t. As in the earlier analysis (46), t cannot be antecedent-governed by any element not dominated by AxP, i.e. any trace outside AxP would not be M-commanded by VP.

Notice also that t, on the other hand, cannot govern t', since VP is an X^{max} which dominates t but not t'. There would be a problem here, however, for the Fukui-Speas hypothesis that LPs are nonmaximal.

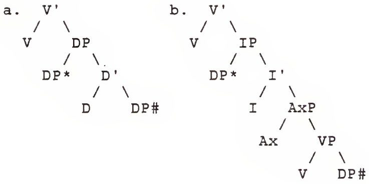
It thus seems plausible to see LPs as barriers to government in general. One advantage of this hypothesis is that it may provide a way to account for some aspects of government and Case phenomena which have been expressed by the Minimality Condition (in its narrow formulation) in Barriers theory.

3.7 Minimality

Minimality departs from the central goal of Barriers theory to unify barriers to movement and government, since Minimality is relevant only to government. The narrow formulation of Minimality is the only principle which creates X-one-bar barriers, which turn out to correspond to LPs in generalized X-bar theory. Furthermore, it seems that the Barriers theory version of Minimality relies somewhat on the notion that some intermediate level of projection may be missing if there is no SPEC. Since the major barriers which seem to be defined by the (narrow formulation of) the Minimality Condition correspond to LP-barriers in our analysis, it may be possible to omit considerations of minimality from bounding and government theory.

We are not prepared to discard Minimality altogether.[6] Simply put, we will leave the possibility open that Minimality may be relevant in determining which of two governors is "closer." Its effects may be significant, however, only in a few instances. Generally, the sisterhood condition on theta-government will restrict theta-role (probably theta-function) assignment, and the barrierhood of LPs will ensure most of the time that antecedent-governors are local. The relevance of Minimality may turn out to be most perceptible in the area of Case assignment. Consider the structures in (53), for example, in which we assume Abney's (1987) analysis of DP and Chomsky's (1986b) "bare IP hypothesis" for ECM constructions.

(53)



If only LPs are barriers to government, V can govern and assign Case to DP and DP*, but not DP#. ECM constructions might arise when this occurs as in (53b). It is not clear, however, whether V can ever assign Case to DP* in (53a). We might argue that V governs DP* in both structures, but that it cannot assign Case to DP* in (53a) because the latter gets Case from a "closer" Case-assigner.

A problem which comes up here is how to prevent V from governing the subject of IP in (54), if only LPs are barriers to government, and CP and IP are FPs.

(54) a. John believes [that [she is intelligent]]
b. *John believes [that [her is intelligent]]
c. *John believes [$_{CP}$ that [$_{IP}$ her to be intelligent]]

We might block (54c) with the usual assumption that that cannot cooccur with a nonfinite I such as to. Then (54b) might be ruled out since AGR in I is a "closer" governor than believe.

On the other hand, if IP is an LP, we do not need to resort to Minimality to explain the ungrammaticality of (54b). By this theory, believe cannot govern--and thus cannot assign Case to--the embedded subject. A verb can govern the subject of a "bare IP," as in (53b), however, because IP (though it dominates the subject of IP) M-commands V and is thus not a barrier "from" V. The government relation here would be essentially like that holding between antecedent and trace in (47).

Minimality has been employed in Barriers theory to account for two recalcitrant phenomena, the noun-complement case of the "Complex Noun Phrase" constraint and the "that-trace effect" (see (2.2(36)). In our theory, the noun-complement phenomena are taken care of within bounding theory, and in fact we show why some complex noun phrases are not islands, strictly speaking (see (10), (11)--and (62), 64)), as Ross (1967) and others have pointed out. We will not attempt to deal with the that-trace effect until Chapter Four. What should be kept in mind is that many of the effects of Minimality may be provided for by other principles, especially the principle that LPs are barriers. We will thus remain cautious about adopting the Minimality Condition, though it may turn out that the condition is needed.

3.8 CFP-barriers to Government and Adjunct Movement

Antecedent-government is thought to be crucial for non-theta-governed traces; this is the "hinge" in the definition of proper government, relevant to the ECP.

(55) x properly governs y if x theta-governs or antecedent-governs y. (2.2(27))

(56) ECP: All nonpronominal empty categories must be properly governed. (2.(30))

Problems have been noted with the disjunctive character of (55), as well as with questions of a more empirical nature concerning "super-raising," in which theta-government appears not to be sufficient for proper government of certain argument traces.

(57) what did John wonder whether to fix t

(58) a. *how did John wonder whether to fix the car t

b. *John seems that it is considered t to be intelligent

c. *a man seems there to be killed t

The problem is this, as outlined by Chomsky (1986b): Even though the essential nature of the movement appears to be the same, (57) and (58a) differ remarkably in degree of ungrammaticality, the former being a "weak _wh_-island" violation, while the latter is more ungrammatical; it is thought that there is some failure of antecedent-government in (58a). This strong type of ungrammaticality also seems to be involved in (58b); it is not simply a violation of bounding--the only possible relevant "bounding node" that is skipped is CP, yet (58b) is more ungrammatical than a weak wh-island effect. The trace t is not theta-governed by believe in (58b), so it is not difficult to claim that there is a failure of antecedent-government here. (58c) seems to exhibit the same kind of violation--both (58b) and (58c) seem to be cases of "super-raising"--but t in (58c) is theta-governed by kill. Therefore, it seems that theta-government by a lexical head is not sufficient for proper government.

We propose here that the requirement of theta-government for certain traces follows from theta-theory. Consider the "extended theta-theory" discussed in (2.1), extended in that it includes principles concerning predicative elements (e.g. modifiers) as well as arguments. By this theory, any source trace must be in a position "with content," whether it is an argument or not. This accounts for the observation that, though the ECP leaves it open whether any trace can be either theta- or antecedent-governed, intermediate traces--as well as terminal landing sites--are not theta-marked. Nor are they "true adjuncts," i.e. marked as modifiers in some fashion. Only an argument source trace can be and must be theta-governed. Requirements of theta-government thus appear to be provided for aside from the ECP, and in the spirit of modularity could easily be removed from the ECP.

Given these considerations, suppose we claim that all traces must be properly antecedent-governed. Then we must account for the cases in which adjunct movement appears to result in a violation of this requirement, when argument movement does not.

(59) a. what did John t" wonder $[_{CP}$ whether $[_{IP}$ PRO to t' fix t]]

b. how did John t" wonder $[_{CP}$ whether $[_{IP}$ PRO to t' fix the car t]]

c. who did John t" wonder $[_{CP}$ whether $[_{IP}$ PRO to t' consider [t to be intelligent]]

(60) Revised ECP: All nonpronominal empty categories must be properly antecedent-governed.

In Barriers theory, CP inherits barrierhood from IP, blocking antecedent-government in (59). Extraction in (59b) is ungrammatical because t' is not antecedent-governed. Nor is t' in (59a) or (59c) antecedent-governed, but these, being traces of arguments, can be deleted, following the Lasnik-Saito analysis.

A curious situation we face, whether adjoining t' to VP or moving by substitution into the SPEC of AxP, is that an adjunct (source) trace is itself properly antecedent-governed, by t'. It is t', a trace in a nonargument position, whose status is in question, but t' behaves differently, depending on whether it binds an argument or an adjunct.

We will attempt to deal with this straightforwardly--t' is a nonargument in (59b), but an argument in (59a) and (59c), just as the wh-word in (59b) is a nonargument, and in (59a) and (59c), an argument. Now, let us explore the hypothesis (61).

(61) CFPs are barriers to government (in some way to be defined) of nonargument traces.

CP thus would block antecedent-government of t' in (59b), but not in (59a) or (59c).

While Barriers theory claims that antecedent-government is unnecessary for argument traces, we propose that antecedent-government of "argument traces" (in the broad sense discussed above - argument traces and traces of arguments) is more difficult to block than is antecedent-government of nonargument traces. Traces are not deleted in our system, because they are necessary for proper antecedent-government. Note that the principle in (60), though stipulative at this point, indicates that there may be some support for continuing to distinguish proper antecedent-government from proper bounding, as Chomsky has (and for similar reasons).

It is clear, however, that CFPs cannot be barriers to government of all adjunct-traces, given the grammaticality of (61) (cf. Lasnik and Saito, 1984).

(61) how did John t^3 say $[_{CP}$ t" that Bill t'

fixed the car t]

So far, it looks as if a CFP is not a barrier to government when that CFP is bridged. It is also possible that CFP is not a barrier to government of anything in its SPEC, even a source trace. It seems clear from (59b), however, that one CFP is sufficient to block government.

Let us examine some of the classical cases in which adjunct movement appears to violate the proper-government requirement but argument movement does not.

(62) a. what did $[_{IP}$ John $[_{AxP}$ t^3 $[_{VP}$ announce $[_{DP}$ t" a

$[_{NP}$ plan $[_{CP}$ $[_{IP}$ PRO to $[_{AxP}$ t' $[_{VP}$ fix t]

b. how did John announce a plan to fix the car t

(63) a. what did $[_{IP}$ John $[_{AxP}$ t" $[_{VP}$ wonder $[_{CP}$ whether

$[_{IP}$ PRO to $[_{AxP}$ t' $[_{VP}$ fix t]]]]]]]

b. how did John wonder whether to fix the car t

(64) a. what is $[_{IP}$ it $[_{AxP}$ t^3 $[_{VP}$ e $[_{DP}$ t" $[_{NP}$ time $[_{CP}$ for

$[_{IP}$ us to $[_{AxP}$ t' $[_{VP}$ fix t]]]]]]]]]

b. how is it time for us to fix the car t

If we assume that CP is not L-marked in (62-64), it must be skipped. This CFP, however, is a barrier to antecedent-government of the adjunct-trace t', since the trace is not in the CFP's SPEC. Since the CFP is not a barrier to government of arguments, the (a) examples result in at most "weak" bounding violations from the skipping of one CFP. The situation worsens in (65), where DP must also be skipped.

(65) a. what did [$_{IP}$ John [$_{AxP}$ t" [$_{VP}$ announce [$_{DP*}$ the
[$_{NP}$ plan [$_{CP*}$ [$_{IP}$ PRO to [$_{AxP}$ t' [$_{VP}$ fix t]]]]]]]]]

b. how did John announce the plan to fix the car t

Here, both (65a) and (65b) are ungrammatical: Two CFPs are skipped, as well as two LPs. NP is a barrier to government of t' in both (65a) and (65b), but DP* and CP* doubly bar antecedent-government of the trace t' of how in (65b). Compare (62) and (65) to (66).

(66) a. what did [$_{IP}$ [$_{CP*}$ that [$_{IP}$ John [$_{AxP}$ t[3] [$_{VP}$ announced
[$_{DP}$ t" a [$_{NP}$ plan [$_{CP}$ [$_{IP}$ PRO to [$_{AxP}$ t' [$_{VP}$ fix t
]]]]]]]]]] surprise Mary]

b. how did that John announced a plan to fix the car t surprise Mary

Extraction in (66b) is worse than (66a) because both CP and CP* are CFP-barriers to government of the adjunct-trace t'.

It can be seen from the cases so far discussed that one CFP can suffice to block proper antecedent government of adjunct traces. In (61), one CFP alone does not block such government, even though it dominates the governee. (67) and (68) highlight the relevant cycles in (61), and in ((62)-(64)), respectively. The difference is that t^{n} is in the SPEC of the CFP in (67), though not in (68).

(67) ... t^{n+1} $[_{LP}\ [_{CFP}\ t^{n}\ \ldots\ ]]$

(68) ... t^{n+1} $[_{LP}\ [_{CFP}\ [_{IP}\ [_{FP}\ t^{n}$

(69) x governs y if x m/M-commands y and there is no barrier which dominates y and does not M-command x.

a. Barriers are LPs, and CFPs for adjuncts
b. A CFP barrier is ineffective if the governee is in its SPEC.

Recall that the condition against skipping more than one CFP apparently must deal with things happening in different cycles, indicating that this restriction may be an interpretive principle rather than one of bounding. Thus, we might be able to delete intermediate traces and see "proper government" as a relation which must hold between the "final" antecedent and the source trace. Suppose that we can also delete the nodes which immediately dominate the intermediate traces. Then CFPs that are bridged will be deleted, but those which are skipped will remain, and be relevant for determining whether proper government holds.

(70) a. how did $[_{IP}$ John $[_{AxP}\ \underset{0}{\cancel{t}}$ $[_{VP}$ say $[_{CP}\ \underset{0}{\cancel{t}}$ that $[_{IP}$ Mary $[_{AxP}\ \underset{0}{\cancel{t}}$ $[_{VP}$ fixed the car t]]]]]]]

b. how did $[_{IP}$ John $[_{VP}$ say that $[_{IP}$ Mary $[_{VP}$ fixed the car t]]]]]

(71) a. how did $[_{IP}$ John $[_{AxP}\ \underset{0}{\cancel{t}}$ $[_{VP}$ wonder $[_{CP}$ when $[_{IP}$ Mary [$\underset{0}{\cancel{t}}$ [fixed the car t]]]]]]]

b. how did $[_{IP}$ John $[_{VP}$ wonder $[_{CP}$ when $[_{IP}$ Mary $[_{VP}$ fixed the car t]]]]]

It is immediately apparent, however, that LPs cannot be barriers to government under this analysis, since two VPs in both (70) and (72) would be barriers to antecedent-government of t by the _wh_-word antecedent. Before we adopt such an analysis to explain how CFPs are barriers to government, it is necessary to consider independently whether LPs figure in any way as barriers to government.

2.9 Are LPs Barriers to Government?

We have laid groundwork for the hypothesis that one CFP can suffice to block government of adjuncts, as long as the CFP is not bridged. This is relatively easy to discern, since it accounts for well-known examples of ungrammatical adjunct movement. As it turns out the status of LP as a barrier to government is less clear. In our investigation of this question, we will focus on adjunct movement, since it is generally assumed that adjunct movement exhibits problems for the ECP more clearly than does movement of arguments.

(72) a. which car$_1$ didn't [$_{\text{IP'}}$ you [$_{\text{AxP'}}$ t"$_1$ [$_{\text{VP'}}$ know
[$_{\text{CP}}$ how$_2$ [$_{\text{IP}}$ to [$_{\text{AxP}}$ t'$_1$ [$_{\text{VP}}$ fix t$_1$ t$_2$]]]]]]]

b. *how$_2$ didn't [$_{\text{IP'}}$ you [$_{\text{AxP'}}$ t" [$_{\text{VP'}}$ know [$_{\text{CP}}$ which car$_2$
[$_{\text{IP}}$ to [$_{\text{AxP}}$ t' [$_{\text{VP}}$ fix t$_1$ t$_2$]]]]]]]

Movement of how in (72a) completely skips VP, AxP, and IP, since which car must move through the SPEC of AxP. If VP were a barrier to government across-the-board, (72a) should be ungrammatical, since VP dominates t$_1$ and does not M-command how. The same can be said for the movement from t$_2$ to the position of which car in (72b). If LPs are only barriers to government of adjuncts, then (72b) should be better than (72a), since VP would block government of the trace of how in (72a), but not the trace of which car in (72b).

We will consider an alternative analysis of (72) and (73) in Chapter Five. For now, it should suffice for us to note that certain problems arise in the theory of government that we have developed so far. Namely, while it appears to be generally plausible that LPs are barriers to government, there are a few instances in which this does not appear to hold, by our analysis, indicating either that LPs are not barriers or that our representation of structures such as (72) is incorrect. Second, if CFPs which are bridged are deleted, LPs cannot be barriers to government. Neither of these pieces of evidence is conclusive, however. We will return to these issues in Chapter Five, and postpone discussing till Chapter Six the relevance of bridging vs. skipping in determining whether CFPs are barriers to government.

3.10 Summary

We began by proposing a "generalized," but restrictive, binary-branching X-bar system with "free projection" (Bouchard, 1979), which allowed us to refrain from stipulating the level of maximal projections and which accommodates a wide range of structures without the use of adjunction. One important consequence of this theory is that "dummy positions" do not fall out of the architecture of the phrase, as they could if level of maximal projections were stipulated; such positions must be "licensed" in some other way.

In addition, we have made use of the lexical/functional distinction in a number of crucial ways. LPs and CFPs are barriers, but they differ in this respect just as they differ in having "descriptive content" vs. "syntactic content," respectively. LPs are subject to the Projection Principle, but FPs fall under subcategorization theory alone. From this, we have derived the claim that dummy positions, i.e. truly empty categories in D-structures, can arise only in heads and SPECs of FPs, and only these dummy positions can be landing sites for movement.

The importance of the use of dummy landing sites for movement is highlighted by the distinction between bridging and skipping. Essentially, FPs can be bridged if their SPECs or heads are "dummy positions," while LPs are never bridged, since Ls never govern dummy positions. Since LPs are not bridgeable, any condition which involves the crossing of LPs need refer only to "crossing" not to "skipping." It could be, then, that we have three conditions, one on crossing, one on skipping, and one on bridging.

(73) a. In a given iteration of movement, only one LP can be CROSSED.
b. In a given extraction, no (more than) one CFP can be SKIPPED.
c. A CFP can be BRIDGED only if it is "L-marked" (in some sense to be defined).

The "S/S-bar-parameter" would essentially involve the material in parentheses in (73b) as a "marked" choice.

The various principles interact, so that having to skip one node can have repercussions elsewhere. Having to skip a barrier in itself may not cause any violation, but it may have an indirect effect on what in total is skipped during a given extraction or single application of movement.

Our consideration of bridging and the role of some notion of "L-marking" has led us to question the status of IP, since having to skip a subject CFP alone does not suffice to make an extraction a strong violation. We encountered problems with the hypothesis that IP is an LP, since "weak _wh_-island violations" and fully grammatical extraction from subjects of ECM constructions appear to involve the skipping of both IP and VP in the same iteration of movement. We will see in Chapters Four and Five that there may be a way to allow IP-bridging in the _wh_-island cases, and that the bare IP analysis needed not be adopted, alleviating these and other problems.

In the spirit of Barriers theory, we have explored to some degree the question whether barriers to movement are also barriers to government. We have adopted a revised ECP, which claims that all traces must be antecedent-governed. If LPs are barriers to government, we must replace the concept of "exclusion" employed in Barriers theory with that of "M-command," to account for antecedent-government. One possible advantage of seeing LPs as barriers is that we may be able to account for certain Case phenomena, i.e. the apparent fact that some SPECs can be assigned Case from outside a phrase, while complements of Ls cannot be. The hypothesis that LPs are barriers to government seems to be in some competition with the Minimality Condition, in that both principles provide for similar phenomena. Again, the status of IP comes up, since the possibility that IP is an LP supports the idea that LPs are barriers to government.

Further, we have found some reason to maintain that CFPs are barriers to government of nonargument traces, as long as the CFPs in question are skipped. This hypothesis is used to account for why complex extraction of adjuncts is often worse than the same extraction of an argument. However, one way to execute the idea that CFPs are not barriers to government when they are bridged, namely, to delete all intermediate traces and the CFP nodes that immediately dominate them before the ECP applies, in turn challenges the hypothesis that LPs are barriers to government at the same time.

We have encountered other problems with the notion that LPs are barriers to government. It is unclear what should be done with relatively grammatical multiple movements of wh-elements out of the same VP; one of these movements is going to have to involve the skipping of both VP and AxP, again conflicting with the idea that VP is a barrier to government. We will consider the hypothesis again in Chapters Five and Six.

3.11 Notes

[1] It has been claimed by some that the subcategorization frame can be derived from the theta-grid, i.e. that categorial selection may follow from the theta-roles selected (Pesetsky, 1983; cf. also Grimshaw, 1981 and Chomsky 1987a:86ff). While this is arguably the case for lexical heads, it is not clear that Fs select their complements in the same way. Throughout this work, we will refer to the selectional properties of F heads as "subcategorization," but it should be noted that some other principle, perhaps one requiring a "matching" of categorial features between an FP and its LP, might provide for these phenomena, so that categorial selection (Chomsky's 1987a "c-selection") is unnecessary in the lexicon.

[2] At the least, we claim that movement can involve only dummy positions in FPs when the major cases of "structure-preserving" movement (Emonds, 1976) are involved, i.e. DP- and wh-movement. It remains to consider various movements proposed in analyses of different languages to see how generally this principle might hold.

[3] Chomsky and others have argued against string-vacuous movement, but we will assume that it is permissible. In fact, Barriers theory needs string-vacuous movement (as we do) to account for wh-islands created by movement of subjects into CP.

[4] This is substantiated in Rizzi's later discussion of the effect of finiteness on extraction from the two types of constructions.

[5] We must analyze di cui as a sister to D, and claim that DP is skipped in these constructions, first of all to allow the movements in (32) and (33), but not in (i), which is ungrammatical in Italian, as well as relatively worse than (26) in English.

(i) *John, to whom $[_{IP}$ $[_{DP}$ a $[_{NP}$ letter t]] was lost]

[6] Rizzi (1987) has presented convincing arguments for Minimality in binding of quantifiers, and he and Bouchard (1987), in independent work, have suggested that some notion of "relative Minimality" is relevant, so that, for example,

a trace can be governed by an element which assigns it a theta-function and by a proper antecedent-governor. Under relative Minimality, the condition holds separately of head-governors and antecedent-governors; thus Bouchard (1987) proposes that the Minimality Condition is stated so that an element can have only one relevant governor of each bar level; i.e. one relevant head-governor and one relevant XP-governor. Perhaps Minimality is relevant for LF interpretation, accounting for Rizzi's binding phenomena.

CHAPTER 4
FACTORS WHICH INTERACT TO PERMIT BRIDGING

4.1 X-bar Theory and Empty Positions at D-structure

At least since Erteschik (1973) it has been discussed that certain "matters of lexical choice" enter into the decision as to whether grammatical extraction can occur. Many have noted such phenomena as simply "problems at the level of interpretation," as well one might, searching for some general structural properties, e.g. of wh-movement, by abstracting away from differences involving "specificity," "tensed clauses," and various other considerations. That is, it has been common to take the often fruitful view that movement applies freely in such cases as (1), but the construction is rejected elsewhere, presumably at some point during interpretation.

(1) who did you see that book about

But let us just suppose that such factors do enter into determining whether "movement itself" can occur, in some fashion, having some effect on the structure which can be seen in phenomena relevant to bounding, government, Case, etc. This is not to claim that there are no semantic factors influencing the feasibility of extraction (cf. Gueron, 1979 concerning "focus" considerations, and the idea of "deictic specificity" developed below). Nor is it to propose that movement rules do not operate "blindly;" they can work freely on a structure that has been affected in some way so as to affect movement. A key proposal that we will develop is that "specificness" is associated with the SPEC of a phrase. Since such SPECs might otherwise be possible landing sites, "specificness" affects (*wh*-) movement, indirectly.

We take seriously the idea that there is a large class of constructions which are inherently "islands for movement," following Erteschik (1973), Koster (1978b), van Riemsdijk (1978), Bouchard (1984), and others, and that something "special" is going on when extraction is permissible, in some sense. That is, "bridging" is special, and must be "licensed."

Recall the theory of free projection. It basically says that whatever structure is needed is used to construct a tree with binary relations among the categories "present," no more and no less. So, if a head has one complement as its only satellite, the maximal projection of that head is "one." This means that, unless we assume quite a bit of abstraction, in most circumstances an embedded CP will have $C^{max} = C'$, as in (2).

(2) John murmured $[_{\substack{C' \\ | \\ =C^{max}}}$ $[_{C}$that] $[_{IP}$Bill had hit him]]

In the general case, then, most complements are "islands" for wh-movement, (i.e. they cannot be bridged), since there is no empty SPEC position through which to move. In some situations, however, null elements may be allowed when they are governed by certain types of heads. The special property of "bridge verbs" (and similar elements) would be that they assign some special "feature" to their complements, creating a "dummy SPEC" then open for movement. Bridge verbs can just as easily assign this feature to a filled SPEC, but if no such SPEC is available, the feature assignment licenses an empty category at D-structure.

(3) John said $[_{C''}$ [e] $[_{C'}$ that $[_{IP}$ Bill had hit him]]]

$C'' = C^{max}$

We can see from (1') that it cannot be said simply that bridge verbs allow extraction, or allow bridging; the SPEC must also be "empty." In (1'), the DP apparently has no special empty position through which the wh-word can move, in spite of the fact that see is a "bridge verb" (cf. (4)).

(1') who did $[_{IP}$ you $[_{AxP}$ t $[_{VP}$ see $[_{DP}$ that $[_{NP}$ book $[_{PP}$ about t]]]]]]

(4) a. who did you see a book about
b. who did you see a picture of

The SPEC is apparently filled in (1') by the "definite" demonstrative, blocking the bridging of DP. Perhaps this is because the demonstrative and [e] are both inherently SPECs, and cannot appear in any other position, hence are in complementary distribution. Addressing this question seriously must wait until our discussion of the particulars of the SPEC system in (4.5). In any case, by our analysis (1') is barred in English because a CFP (DP) is skipped, which in turn forces the skipping of two LPs. The structure (5) is ungrammatical in English, because of the skipping of a CFP, but I am told by my informant that its equivalent in Italian is permissible.[1]

(5) of whom did my picture appear in the newspaper
di cui il mio foto é apparsa ...

This seems to support the view expressed in Chapter Two that di cui resides in the SPEC of DP. There we also argued that it may be that (6) (and its equivalent in Italian) is ungrammatical because two LPs are skipped.

(6) who did a letter to get lost

The extraction is allowed in (5) because the skipping of DP does not force the skipping of two LPs, since of whom/di cui is not inside NP. Since Italian can skip one CFP, (5) is grammatical in Italian but not in English. As we discussed in Chapter Two, (7) illustrates an "illegal" movement in any language, since two CFPs are skipped. If DP were bridged here, the ungrammaticality of (7) could not be explained in our theory.

(7) Gianni, of whom I don't know where a picture has appeared in the newspaper

For English, this means that (8) should be better than (9), since (9) violates the principles involving LPs and CFPs (i.e. two LPs and one CFP are skipped), while (8) only violates the prohibition against skipping a CFP.

(8) what did you say you [$_{VP}$ saw [$_{DP}$ that [$_{D''}$ picture of t]]

(9) what did you say you [$_{VP}$ read [$_{DP}$ that [$_{NP}$ book about t]]

Judgments concerning (8) and (9) are rather difficult, perhaps because of the different types of "specificness" which we will discuss shortly. While I would prefer that judgments concerning (8) and (9) be a little stronger, there is other evidence that the English of whom in DPs such as picture of whom also resides in the SPEC of DP. Consider the examples in (10-12).[2]

(10) a. who did you see [a picture of]
b. what did you see [a [book about]]

(11) a. what did you destroy [a picture of]
b. *what did you destroy [a [book about]]

(12) a. ?who did you destroy [that picture of]
b. *who did you destroy [that [book about]]

When the governing verb is a "bridge verb," either type of PP can be extracted from, as in (10). When it is not such a verb, the about-phrase in (11b, 12b) cannot be extracted from, although the *of*-phrase can (11a). In fact, a broader range of verbs can govern [a picture of] in such a structure:

(13) a. who did you frame a picture of
step on
mess up
like
sell
criticize
fall in
love with

b. *who did you mess up poems to
step on a book about
like
sell
criticize
fall in
love with

However, our analysis so far predicts that (11a) and (12a) have the same status; both are "weak" violations since only DP and VP are skipped (one CFP and one LP, respectively). I would like to suggest here that a distinction should be made between, say, a noun phrase which is "inherently specific," in that there is a direct, "deictic knowledge" of what object is being referred to, and one which is "specific in the discourse." It is in the latter reading that (12a) seems on a par with (11a); the picture specified by *that* is already known from the discourse, even though the speaker may or may not know specifically which picture is being discussed. In this sense, there appear to still be "semantic specificity conditions on extraction," in that a CFP seems uncrossable if it is "referentially" ("inherently") specific, but if its "specificness" is derived from the fact that it refers to "old information," i.e. "that picture you were talking about," the phrase may be skipped, but not bridged, because its SPEC is filled.

If this is on the right track, from a syntactic point of view specificity does not totally block extraction. It directly bars bridging of the phrase whose SPEC it fills, but "specificness" does not appear to directly prohibit skipping. Rather, other factors enter in once some node is skipped. If bridging a node is the only way to avoid skipping two LPs then, naturally, obligatory skipping of that node results in an LP-barrierhood violation. Then it could APPEAR that there is a condition against extracting from a "specific" phrase, when actually "specificness" indirectly affects the feasibility of extraction simply by filling a SPEC and thereby barring bridging. Aside from this, there may be semantic conditions on extraction, perhaps involving deictic or "referential" specificity.

Two major factors interact in the licensing of bridging: 1) the SPEC position must not be already filled by some base-generated element, and 2) the "empty SPEC" which is then allowed must be "triggered" by something outside the phrase. As for the second factor, we will explore the idea that "L-marking," in some sense to be defined, is the relation relevant to the licensing of empty categories at D-structure.

4.2 "L-marking"

The concept of "L-marking" employed in Barriers theory is similar to ideas explored by Stowell, Kayne, Bouchard, and others. The basic claim is that the fact that a phrase is theta-marked in a special way and/or by a special type of head makes it capable of being crossed. If it is not theta-marked (i.e. an "adjunct"), or if it is theta-marked but not in this special way (e.g. a "subject"), the phrase is impervious to such movement (cf. Huang, 1982). In Barriers theory, this special way (L-marking) is "theta-marking by a lexical category" (or agreeing with some element that is theta-marked by a lexical category). There are problems with this view. Consider (14) and (15), the questions corresponding to (3) and (2), respectively, also one of the contrasts discussed by Erteschik (1973), Stowell (1981), and others.

(14) what did John say (that) Mary had seen

(15) what did John murmur (that) Mary had seen

The two verbs are quite similar; each appears to assign a theta-role to its clausal complement, and in a general sense each clause appears to be "L-marked." Theta-marking by a lexical category does not seem to be sufficient to give only grammatical cases of extraction.

Stowell, Kayne, and others have claimed that the clause enters the theta-grid of the matrix V in (14) but not in

(15), so that the ungrammaticality of (15) follows from the fact that some sort of "chain" of antecedent government is broken.

But it is not clear to me that murmur does not assign a theta-role to a that-clause complement. If the point is that murmur somehow assigns a theta-role more "indirectly," then "L-marking" (etc.) must be modified to mean "'direct' theta-marking by a lexical category." Then the problem would be to define "direct" and "indirect" in some nonidiosyncratic fashion; we do not want L-marking to be largely reduced to lexical idiosyncracies, or it will lose much of its explanatory power.

Such an analysis also appears to fail to capture the "exceptional" nature of "bridge verbs." If it is a common thing for an element which receives a theta-role to be assigned a position in the theta-grid of its head-governor, and if such assignment creates conditions favorable for movement, then it seems that the murmur case would the exceptional one, in this view. That is, extraction out of complements would be generally allowed but exceptionally barred, when something bars this natural theta-relation. Linked directly to theta-role assignment, empty categories and bridging should be allowed generally.

It seems, however, that the "trigger" for bridging seems to have to do with something special about, or something in addition to, the theta-marking involved. That is, it is not whether a theta-role is assigned, but perhaps how, or perhaps in addition to what else. We will assume, then, that both say and murmur assign theta-roles to clausal complements.

It might be argued that say and murmur assign different theta-roles to their clausal complements; then "L-marking" would have to be altered to "theta-marking with (a) certain theta-role(s) by a lexical category." Though this may work, it does not seem potentially revealing, leading a cul-de-sac of determining suitable lists of different theta-roles.

Another possibility is that say and murmur assign a theta-role because their clausal complements are in different positions. Perhaps say theta-marks its clausal complement as a a "direct object," while murmur theta-marks some kind of "oblique" clausal complement. I know of no convincing structural evidence for this claim, however. For example, both say and murmur can take the complement something to the effect that..., and neither can take it that..., as in *she said/ murmured it that he arrived. As we shall see in Chapter Five, oblique complements may in fact be uniformly "L-marked" in any case.

I would like to follow a different route. The fact that murmur incorporates in its meaning the manner in which something is said, (15), repeated below, refers to a "specific" instance of saying.

(15) what did John murmur (that) Mary had seen

Now, suppose that it is "unmarked" for the clause to be "specific." Murmur marks no feature on its complement, and there is no position by which bridging could take place. Then this complement would be have to be skipped.

Alternatively, we could claim that verbs such as murmur assign [+specific] to the SPEC of CP, "filling" it. I think we should remain cautious about this approach, however, since it appears to be quite a task to define how and why nonbridge verbs are "specific." Since assigning no feature gives the same result, it seems natural to suppose that no feature is assigned. And, in fact, we will show that it may be easier to define the verbs which are "nonspecific" in (4.7).

Our theory predicts that (15') should be marked because the CP complement of murmur cannot be bridged and therefore must be skipped. But it should not be a strong violation, and it should be less of a violation in Italian, since only one CFP is skipped.

(15') what did $[_{IP}$ John $[_{AxP}$ t $[_{VP}$ murmur $[_{CP}$ that $[_{IP}$ he should [t [do t]]]]]]]

It seems to me that the first part of this prediction is correct, that (15) is not "that bad" in English, but on the other hand, according to my informants, it is not considered "grammatical" in Italian. If it is equally "funny," then it seems that we must qualify the view that it is grammatical in Italian, but not in (standard) English, to skip any one

CFP. Perhaps some CFPs are better for skipping than others; perhaps something other barrier is being skipped here that we have so far not recognized.[3]

4.3 The Influence of Tensed Clauses on Wh-movement

Various cases have come up in which _wh_-movement has been shown to be influenced by the (non)finiteness of a clause involved in the extraction. Of course, tensed clauses do not block _wh_-movement outright (unlike in binding, where they play a direct role in determining the "governing category"), as can be seen from (16) and (17), much discussed examples.

(16) a. John seems to like football
b. *John seems that likes football
c. *football seems that John likes

(17) a. who did John believe to be intelligent
b. who did John believe liked football
c. who did John believe that Bill liked

But the finiteness of clauses does have an effect on more complicated cases of _wh_-movement, as discussed by Rizzi (1982), Chomsky (1986b).

(18) a. ?to whom did John wonder what to give
b. ?what did John wonder to whom to give

(19) a. *to whom did John wonder what Bill gave
b. *what did John wonder to whom Bill gave

Attempting to discern the influence of "tensedness" (or perhaps the presence of AGR) on _wh_-extraction is an extremely complicated affair. We will try to show that this is natural considering what our claim will be, that while (non)finiteness does not have a direct effect on *wh*-movement (cf. (17)), [±finiteness] has some localized structural effect, which becomes relevant for bounding violations only if other circumstances also arise. So, for example, there is no problem with (17c) because the SPEC of CP is still available, but in (19) the finiteness of the clause PLUS the unavailability of the SPEC of CP make it necessary to skip two VPs (i.e. LPs) in one movement.

There are a number of ways to execute this idea. We will explore the claim that [+finiteness], or perhaps AGR, fills the SPEC of AxP (#), which creates no problem in (17c'), but which forces the skipping-at-one-time of the two VPs in (19a').

(17c') who did [$_{\text{IP}}$ John [$_{\text{AxP}}$ # [$_{\text{VP}}$ believe [$_{\text{CP}}$ t that
[$_{\text{IP}}$ Bill [$_{\text{AxP}}$ # [$_{\text{VP}}$ liked t]]]]]]]

(19a') *to whom did [$_{\text{IP}}$ John [$_{\text{AxP}}$ # [$_{\text{VP}}$ wonder [$_{\text{CP}}$ what
[$_{\text{IP}}$ Bill [$_{\text{AxP}}$ # [$_{\text{VP}}$ gave t t]]]]]]]

An independent advantage of seeing AGR in the SPEC of AxP is that a unified notion of SUBJECT (= subject) for binding theory is provided--SUBJECTs are all SPECs (as are subjects).[4]

Let us explore this hypothesis with respect to other situations in which tensedness has some effect on *wh*-movement.

(20) ?what was [$_{IP}$ John [$_{AxP}$ [$_{VP}$ looking [$_{PP}$ for [$_{DP}$ t [$_{NP}$ someone
[$_{CP}$ (WH) [$_{IP}$ PRO to [$_{AxP}$ t [$_{VP}$ talk [$_{PP}$ to t] [$_{PP}$ about t ...

(21) *what was [$_{IP}$ John [$_{AxP}$ [$_{VP}$ looking [$_{PP}$ for [$_{DP}$ t [$_{NP}$ someone
[$_{CP}$ (WH) [$_{IP}$ he could [$_{AxP}$ * [$_{VP*}$ talk [$_{PP}$ to t] [$_{PP}$ about t ...

CP must have to be skipped in both (20) and (21), since its SPEC is filled, so these are both "marginal" structures in this respect (see n.3). The violation in (21) is worse than in (20), however, because the unavailability of both the SPEC of AxP and that of CP makes it necessary to skip both VP* and NP in the same movement.

On the other hand, it is less clear what effect tensedness has on extraction out of noun phrase complements.

(22) a. what did the company receive a warning that it should improve
b. what did John have a/the feeling that Bill would do
c. which predicament had you accepted the idea that you were going to get into
d. what did he have fears that she would do
e. what did she have dreams that she had done
f. what did she have these dreams that she would do

It seems that as long as the DP is "generic" ("nonspecific") enough, extraction is allowed. But this is what we might expect, if the CP complement is "L-marked" by the N (i.e. if certain "bridge nouns" can "L-mark"); as long as CP and DP can both be bridged, the structure is grammatical, whether the SPEC of AxP is available or not.

(23) what did $[_{IP}$ he $[_{AxP}$ # $[_{VP}$ have $[_{DP}$ t $[_{NP}$ fears

$[_{CP}$ t that $[_{IP}$ she would $[_{AxP}$ # $[_{VP}$ do t]]]]]]]]]

Tensedness also affects extraction from adjunct phrases, as we can see from the contrast between (24) and (25).

(24) who did John leave the party before speaking to

(25) who did John leave the party before he spoke to

Here, as in (20) and (21), the "adjunct phrase," which presumably cannot be bridged because it is not theta-marked. Both (24) and (25) are then "marginal" in the sense that an adjunct CFP is skipped. What sends (25) "over the edge"?

(24') who did $[_{IP}$ John $[_{AxP}$ # $[_{VP}$ leave the party $[_{CP}$ before

$[_{IP}$ PRO $[_{AxP}$ t $[_{VP}$ speaking $[_{PP}$ to t]]]]]]]]

(25') who did $[_{IP}$ John $[_{AxP}$ # $[_{VP}$ leave the party $[_{CP}$ before

$[_{IP}$ he $[_{AxP}$ # $[_{VP}$ spoke $[_{PP}$ to t]]]]]]]]

Assume that the analysis of CP is correct, to postpone discussion of PP (see (5.2)). If CP is not "L-marked," it must be skipped. If the SPEC of AxP is also unavailable, it becomes necessary to skip both VPs in one movement.

Finally, let us consider movement of ECM subjects.

(26) who did $[_{IP}$ John $[_{AxP}$ # $[_{VP}$ wonder $[_{CP}$ when $[_{IP}$ PRO to
$[_{AxP}$ t $[_{VP}$ consider $[_{XP}$ t intelligent]]]]]]]]

(27) who did $[_{IP}$ John $[_{AxP}$ # $[_{VP}$ wonder $[_{CP}$ when $[_{IP}$ he should
$[_{AxP*}$ # $[_{VP}$ consider $[_{XP}$ t intelligent]]]]]]]]

Again, the availability of the SPEC of AxP seems crucial; in (27), both VPs must be skipped since neither CP nor AxP* can be bridged.

It should be noted that this analysis does not appear to be carried over for (28) (from Rizzi; cf. (3.3), in which "tensedness" (or AGR) apparently has no effect.

(28) a. my brother $[_{CP*}$ to whom$_2$ I $[_{VP}$ wonder $[_{CP}$ which
stories$_1$ $[_{IP}$ they $[_{AxP}$ # $[_{VP}$ told T$_1$ t$_2$]]]]]

b. my brother, to whom I wonder which stories
to tell

It is difficult to see why (28a) should be better than (29a) or (30a), but finiteness does not seem to have as much of an effect in relative extraction as it does in matrix extraction or extraction within a complement.

(29) a. to whom does John wonder which stories
they told
b. to whom does John wonder which stories
to tell

(30) a. I know to whom John wonders which stories they told
b. I know to whom John wonders which stories to tell

It might be speculated that the difference has something to do with the fact that CP* is "theta-identified" with *my brother* in (28), but I will not carry this idea further here.

For now, suffice it to say that it appears feasible to see that "finiteness"/"tensedness"--or the presence or absence of AGR--may have some indirect consequences for the basic bounding principles we have developed.

4.4 "L-marking" and the Status of Adjunct Phrases

As was pointed out earlier, one of the goals of notions such as "L-marking" is to account for the apparent islandhood of adjunct phrases. However, it is not totally impossible to extract out of adjunct phrases, as Chomsky (1986b) notices, for example.

(31) which city did $[_{IP}$ John $[_{AxP}$ $[_{VP}$ meet $[_{DP}$ t three $[_{NP}$ people $[_{PP}$ from t]]]]]]

PPs such as these have a sort of "ablative" reading; cf. (32). One option would be to claim that these PPs are "theta-marked" after all, and thus (or also) are L-marked.

(32) what play did you think it was like a scene $[_{PP}$ out of t]

An alternative would be to see these as "marginal" cases of extraction, difficult to process, but not totally barred. This might be accounted for if we say that PP is a CFP, this one CFP is skipped, making it a marked extraction, but there are no other ill effects, as long as a scene ... is "nonspecific." What is barred, then, is the BRIDGING of adjunct phrases, but not necessarily the skipping of them. This is supported by further examples in (33), some of which we have considered before.

(33) a. who did you leave the party before speaking to
b. what did you leave the party laughing at
c. what were you looking for a plumber to fix
d. what color hair were you looking for a woman with
e. how many windows did they destroy the plants in front of
f. what kind of signs does the committee prescribe the height of the lettering on (cf. Ross, 1967)
g. what kind of light did he say the ground was covered with
h. how many houses do you have guards surrounding
i. which person did they leave the party without meeting
j. which person did they leave the party having forgotten to meet
k. how many questions did you not know the answers to

Many (though not all) of these examples are not allowed in numerous languages, because of the markedness of P-stranding. But it at least seems clear that it is possible, if complex, to extract out of adjunct phrases.

A number of semantic and syntactico-semantic considerations play significant roles in this type of extraction. "Specificity" is a factor, and it can be said from a semantic point of view that many adjuncts help to referentially "specify" their modifiee. Also, there are not many elements within adjunct phrases that can be easily "focused," in the sense of Guéron (1979). But under the right conditions, this type of extraction seems possible.

Notice that we must say that one of the PPs in (33f), repeated as (34) below, is "L-marked," since skipping two CFPs is supposedly barred in any language.

(34) what kind of signs does the committee prescribe the height of the lettering on (cf. Ross, 1967)

We will return to this point in (5.2). It is related to the apparent problem with (35).

(35) *who did you hear stories about pictures of

It is unclear why (35) should be ungrammatical, if both PPs are "L-marked". But perhaps, again, they both are not L-marked, unlike in (36), which seems to be an easier extraction.

(36) what do you hate making attempts at responses to

We will discuss these structures again in (5.2), where we seek a plausible analysis of PP. It does seem reasonable to attribute the problems encountered in extraction from these structures to the inability of adjunct phrases to have empty categories licensed through "L-marking". Extraction from some adjunct phrases is possible, however, as long as is grammatical to skip an adjunct CFP and there are no other relevant barriers which must be skipped in addition to and/or resulting from the skipping of that adjunct CFP.

4.5 The "Specifier System": A Look at DP

Abney's (1987) claim that the genitive "specifier" lies in the SPEC of DP meets with counterevidence in a number of languages. Abney's claim is that the order predicted by his analysis does show up, and is therefore unmarked, while the existence of orders such as those in (37) may be accounted for with some extra CP-like category of which the DP is a complement.

(37) a. (Italian)
il mio foto
"my photo"

b. ("archaic" English)
these our gifts

c. (Hungarian)
a Pieter kalapaj
"(the) Peter's hat"

d. (Ancient Greek)
ho toũ basiléōs patḗr
the the-GEN king-GEN father
"the king's father"

Abney (1987) does not attempt to give a methodical account of various determiners and "predeterminers," though he does make some interesting suggestions about what positions certain elements might occupy. He argues, for example, that *we* in (38) is in the head D position, accounting for why it does not receive genitive Case (cf. (37a)) and that *we* is on a par with *those* in (39).

(38) we linguists

(39) those linguists

He also gives evidence, however, that those can lie in the SPEC of DP, as in (40) (assuming three is in the head of DP).

(40) those three linguists

Since (41) is also possible, then the same arguments lead us to claim that we can reside in the SPEC of DP.

(41) we three linguists

To claim that we can reside in the same position leaves open the question of how it retains "its own" Case rather than getting "genitive." Perhaps the resemblance between we and those is superficial after all. A number of analyses are possible for "appositive" elements such as we here; it would take us to far afield to examine them. At the same time, however, it seems that there may be some degree of "fluidity" in the distributional characteristics of determiners and determiner-like elements, accounting for recalcitrant word order phenomena in spite of generally discernible patterns (cf. Jackendoff, 1977).

If it is possible for the same type of category to behave in the same "determinerlike fashion" in different structural positions (as a determiner head or a SPEC of DP), it may be possible to convey a difference in the "submeaning" of a determiner through its syntactic position.

Thus, a demonstrative might appear in either the head or SPEC of DP, depending on what "kind" of demonstrative it is. Most often, demonstratives are found in "specific" DPs, as in (42), but (43) indicates that they may sometimes reside in the head of DP.

(42) *what did you read [$_{DP}$ that 0 [$_{NP}$ book about t]]

(43) what did she have [$_{DP}$ t these [$_{NP}$ dreams that
she would do]]

The distinction seems to come up more often with the articles. For example, arguing along the same lines, we might claim that generic the is in the head D position, thus not an obstacle to bridging, while "specific" the is in the SPEC of DP.

(44) a. *what did he announce [$_{DP}$ the 0 [$_{NP}$ plan to do]]

b. what did he have [$_{DP}$ t the [$_{NP}$ courage to do]]

In fact, there is said to be a distinction between specific and generic a (cf. (45a) vs. (45b)), and perhaps clear evidence can be found for a similar influence on extraction in structures with a which are clearly specific or generic (46).

(45) a. I was looking for a belt with a silver buckle, but I couldn't find it

b. I was looking for a belt with a silver buckle, but I couldn't find one.

(46) a. ?*what kind of buckle were you looking for a belt with, and why couldn't you find it

b. what kind of buckle were you looking for a belt with, and why couldn't you find one

There is other evidence in English of a certain amount of freedom of position for articles, genitives, and quantifiers.

(47) a. many a father
b. the many fathers
c. our many fathers (vs. (37b))

This might also be related to the flexibility, or openness to "reanalysis," evident in the specifier system, as can be seen from peculiar subject-verb agreement phenomena (cf. also a majority of, etc.; number as a D would be plural; see Casagrande, 1984 for discussion of similar constructions in French).

(48) a. [the [number [of X]]] is ...
DP NP PP

b. [a [number [of X]]] are ...
DP D' PP

It does seem to be on the right track to have agreement hold between the DP subject and a predicate, even when DP and its complement (NP, PP) do not agree, following Hellan (1986) (thanks to Gary Miller for making me aware of this example).

(49) a. a fries is what I ordered
b. *a fries are what I ordered

The status of the genitive specifier seems peculiar. On the one hand, it always appears to render a DP specific, no matter what its position (*these our gifts*, *our every gift*).

(50) a. *who are you grateful for these our gifts to
     b. *who are you grateful for our every gift to

On the other hand, it seems fairly clear that the positioning of the genitive is not entirely free. Let us suppose that *wh*-movement within DP (51) uses the SPEC of DP as a landing site.

(51) $[_{DP}$ how short $[_{D'}$ a $[_{NP}$ t book]]]

This analysis seems to be supported by the appearance of *a* in (51); movement seems to be to the SPEC of DP, not to the D head, because D heads still seem to "survive" such movement. Moreover, it fits in well with the general notion that *wh*-movement involves SPEC positions.

Now, what is to be our analysis of DP-movement within DP? If such movement also involves the SPEC of DP, as we might expect in Abney's (1987) analysis and related work, it remains unexplained why nothing like (51) is grammatical for such DP-movement.

(52) a. *a city's a destruction
     b. *the city's the destruction

If anything, it seems that "the other order" is more natural, though ungrammatical in English (53) (cf. Fiengo, 1977). Consider the Ancient Greek structure in (54).

(53) a. a a city's destruction
b. the the city's destruction

(54) ho toũ basiléōs patḗr (=(37d))
the the-GEN king-GEN father

Suppose it is correct to analyze the genitive DP in (54) as a head in DP. Perhaps it is a fairly general principle that the SPEC positions of "specific" phrases are filled. Ancient Greek and Modern English may take different routes in observing this principle; the latter seems to be able to make use of the "genitive determiner" as a "specific determiner" which must occupy SPEC position, while the former employs a separate "specific determiner" in SPEC.

Notice, however, that a fairly sophisticated system of "agreement" ("concord") will have to be developed to explain why the SPEC determiner and the NP complement are the categories which agree in the Greek example.

This section is meant to give an idea of just a few of the issues that arise in attempts to execute the ideas of "free X-bar theory." The status of genitives is difficult to determine without some discussion of a possible theory of DP-movement, to which we turn in (4.6).

What is striking about the analysis so far, however, is that SPECs may be able to be Ds (e.g. articles, demonstratives) or DPs (genitives). Notice that this is not at all unexpected in the theory of free projection, since D^0 is a possible D^{max}. What we will attempt to claim in (4.6) is that it is possible to have elements which "look like D^{max}" in the head of DP, thus accounting for certain aspects of the word order phenomena discussed here.

4.6 DP-movement

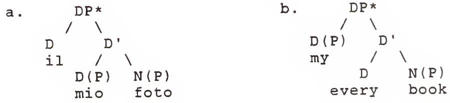
We have noted some problems with the view that DP "genitive specifiers" simply have as their position the SPEC of some DP. We have also mentioned (cf. (3.1)) the possibility that functional heads are possible landing sites. This idea has already been developed by Rizzi (1982) and Chomsky (1986b) in accounting for "head-movement," particularly "V-raising."

It is usually assumed that only phrases move into phrasal positions and only heads move into head positions. This assumption, however, becomes at least open to question from the point of view of the theory of free projection.

We have already seen that it may be possible to have what appears to be a head in a phrasal position. These are what might be roughly termed "predeterminers;" we have suggested that demonstratives, articles, and some quantifiers may appear in the SPEC position (see (42), (44a), (46a), (47b) and (55a)).

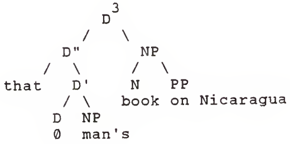
"Possessive pronouns" in this position (47c), (55b) may be seen similarly. The theory of free projection, in fact, predicts that the options in (55) should be possible, since a D^0 can be a D^{max}. In general, we may see this as the definition of most "pronouns," at least the ones which are "pro-D(P)s."

(55)



What we will claim, in turn, is that it is possible to have what seems to be a "phrase" in a head position. This is already hinted at in (55a), since *mio* is "treated like a phrase," like a D^{max}, just as D(P) is in (55b), since it receives a theta-role. Let us take (55a) a step further, and explore the idea that a "more elaborated" D^{max} (where max > 0) can be inserted into this position at D-structure.

(56)



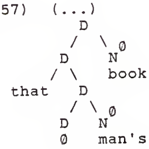
The theory of free projection makes this possible; D^{max} here is D^3, and *that man's* receives some theta-role in relation to *book on Nicaragua*. In this sense, it is "licensed as a D^{max}" itself. It is in this situation that we can have "a phrase in a head position."

As is commonly assumed, we take it that most theta-roles are assigned "directly," i.e. by a lexical head to one of its sisters. It is often claimed that a subject is assigned a theta-role "indirectly." This is true from the perspective that, for example, that man's has some "relation" to book. Let us suppose, however, that a subject is assigned a theta-role, by NP in (56), i.e. "compositionally" (see Chomsky, e.g. 1977b, 1980, 1981b, 1987a, Marantz, 1984). The "relation" that the subject has to a lexical head is "indirect," since it is in some way "mediated" by NP. But from a structural point of view, the subject is assigned a theta-role directly by a maximal projection; what is indirect is its association with the lexical N.

An advantage of this view is that it may be plausible to constrain the core cases of theta-role assignment to adjacent sisters. This means that we expect to find subjects in head positions in the unmarked situation. It further suggests that when subjects are not found in head position, they may be coindexed with the head position. The grammaticality of constructions such as John's every book.

If NP in a structure like (56) is an N^0, as in (57), the subject is a sister to the lexical head.

(57)



In some situations, then, all arguments in a DP can be sisters to a lexical head, from one perspective. What makes the subject different is that the "lexical head" it is a sister to is also a "lexical phrase," i.e. an N^{max}. Complements of N, on the other hand, are assigned roles by "true lexical heads"--heads which are not N^{max}. This makes sense from the point of view of our claim that a primary role for lexical categories, by the Projection Principle, is to "impart meaning" (3.2), i.e. determine the theta-function content of the categories it governs.

If this is on the right track, we can claim that elements which turn out to receive "structural Case" also receive theta-roles under a condition of adjacency. That is, "subjects" and "direct objects" at D-structure are adjacent sisters to their theta-role assigners--and perhaps to their Case-assigners, in languages which observe adjacency (cf. Stowell, 1981; Chomsky, 1981b)--if NP also assigns genitive Case to the subject in (56), (57).

When NP assigns a theta-role to some projection of D (e.g. D" in (56)), we claim it "licenses" that D^n as a D^{max}. Then the D^n can be treated "as a phrase," for purposes of Case assignment and movement, for example.[5]

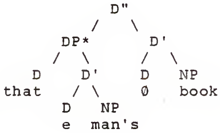
Most phrases "with genitives" are apparently specific; however, there may be a few cases in which a "nonspecific"[6] subject remains in the head of DP.

(58) what did he have [$_{DP}$ t his little plan to do t] (derogatory)

The subject may also remain in the head of DP* in Italian il mio foto (55a), since some other D(P) (il) fills the SPEC of DP*.

If it is true that the SPECs of DPs which are "specific" must be filled, the SPEC of DP may turn out to be an alternate position for the subject of DP.

(59)



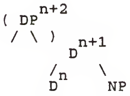
It seems implausible to say that that man's moves from the head of D" to its SPEC, because specific DPs should have filled SPECs "before wh-movement," to block bridging and account for "island" phenomena. We do not want to stipulate that the SPECs of specific DPs be filled before wh-movement; this goes against the hypothesis that movement operates freely. The [0] in (59) does not appear to be a trace, then.

Nor does it seem to be PRO--I know of no arguments to suggest that DP can have a second specifier-like genitive in general; for example, there is no indication in the interpretation of (59) of some other genitive with a different theta-role from that man's. We hypothesize that

[0] (as well as [e]) is a true "dummy position" at D-structure, usually coindexed with DP* in SPEC.

We have so far followed a strict system of progressive bar-numbering in this theory. Suppose that the "progressiveness" holds, but the bar number does not necessarily have to be specified. A dummy position could then be a D^n, as in (60).

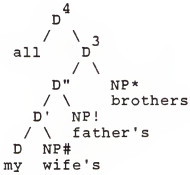
(60)



If we can see to it that D^n is "licensed" by NP,[7] then it should be possible to have movement of D^{max} into this position. If so, DP-movement may be head-movement.

We will examine the idea that "subjects" originate in head position from a number of perspectives. Let us first sketch the way the semantics of complicated possessives might work.

(61)



The category D" (*my wife's father's*) fulfills the same function of "determiner" to the NP *brothers* as D' (*my wife's*) does to NP! *father's*, and as D (*my*) does to NP# *wife's*. Each NP assigns its theta-role to the D^n which is its adjacent sister. The hierarchical relations express how NP* can be the "core" NP relation, since it has the more encompassing relation; NP* assigns a theta-role to D," and all other theta-role assignments which are carried on "below that" are within that D". So naturally "what we're talking about" is "brothers," not "me," "wife," or "father."

Odd as it may look, this is what we might expect, given the "DP hypothesis" (the hypothesis that a "noun phrase" is a "determiner phrase" or some such FP). That is, if FPs must rely on the LPs in their complements to get "descriptive (referential) content," the "major constituents" of FPs (such as Fs and SPECs of FPs) may have to get their theta-function "content" from some projection of L as well.

Thus, it may be true not only that Ls must impart syntactic functions to categories within their LPs, but also that categories which are to receive some theta-function must have it assigned by some projection of L^n to which it is adjacent.

If such a strong condition of adjacency is tenable for theta-role assignment, it seems plausible that when the SPEC of DP is filled with a subject D^{max}, it must be coindexed with the dummy position in the head of that DP. This would account for the difference between (53) and (54) (repeated below).

(53) the city's the destruction

(54) ho toũ basiléōs patḗr (=(37d))
the the-GEN king-GEN father
"the king's father"

Subjects of DP are different from those of IP in their ability to obtain Case within any DP. Thus, in IPs without AGR, subject DPs cannot get Case within IP.

(62) *[$_{IP\#}$ it [[seems [$_{IP}$ $\underset{\text{he/him}}{\text{John}}$ to be intelligent]]]]

Such situations are said to trigger DP-movement, so that the subject of IP can get Case.

If it is true that "DP-movement" is Case-motivated, it should not need to involve any landing site positions which have no possibility of getting Case. This is crucial if we are to prohibit (63a) by bounding theory (since we have no recourse to the ECP as employed in Barriers theory, this being a case of argument-movement). Thus, we might suppose that the no position in AxP is available for DP-movement, since it is not a potentially Case-assignable position.

(63) a. *John [$_{AxP}$ [$_{VP}$ seems [$_{CP*}$ that [$_{IP}$ it is [$_{AxP}$ [$_{VP}$ expected

([)$_{(CP)}$ [$_{IP}$ t to be intelligible]]]]]](])]

b. John seems to be expected to be intelligible

Because there is no way for John to get Case in the SPEC of CP*, CP* being governed by the non-Case-assigning seems, perhaps there is no reason to move there. If this reasoning holds, (63a) violates bounding theory because two VPs are skipped "at once." The corresponding extraction in (63b), however, is grammatical, indicating that some position is avaialable. Yet no possible position in CP* or IP* seems to be assigned Case. Thus, it seems implausible that landing sites available for DP-movement are determined strictly by Case theory. Compare (63) with (64).

(64) Bill expects John to seem to be intelligible.

Let us suppose that CP is present in ECM constructions, and that the subject of the embedded clause (John in (64)) moves into CP, so that it can get Case from expect. Such an analysis has been rejected in the past (e.g. Massam, 1985) because ECM structures do not closely resemble wh-movement structures, which are independently thought to involve movement "into COMP." Such arguments do not hold if the internal structure of CP provides separate positions for the two types of element. Thus, while wh-movement involves the SPEC of CP, the DP-movement involved in ECM constructions employs CP's head as a landing site.

It has been assumed since the work of Kayne, Stowell, Chomsky, and others, that an element can get Case in what is now thought to be the SPEC of CP. Notice that we have no problem with this, since CP is not a barrier to government of arguments, and thus either its SPEC or its head should be able to obtain Case from outside.

Then in French, which allows only interrogative, not declarative, ECM constructions (cf. Kayne, 1984), only movement to the SPEC of CP may be licensed in these situations. "ECM verbs" in French may only L-mark (and thus license empty categories at D-structure) for SPEC-bridging, not for head-bridging, where English ECM verbs license empty heads and empty SPECs. Perhaps head-bridging is licensed in French only when grammaticalized or "lexicalized" voice ("passive or raising") is involved.

If our analysis is on the right track, ECM constructions provide instances of DP-movement. The head of CP, rather than the SPEC, can be employed as a landing site because DP-movement is head-movement.

In (3.6) we claimed that LPs might be barriers to government, which means that they block Case assignment by a head they do not M-command. It is still unclear why *John* cannot obtain Case from *expect* in (65) if this is true, unless IP is a barrier.

(65) *Bill expects [$_{CP}$ that [$_{IP}$ John to be there]]

If IP is a barrier, so that *expect* cannot govern and assign Case to the subject of IP, (66) should be barred for the same reason that (65) is.

(66) *Bill expects [e [John to be there]]

In turn, it should follow that (67a), which involves a "raising verb," is ungrammatical for the same reason that (66) is. That is, regardless of the verb's ability to assign Case, a subject cannot receive Case from outside as long as it remains inside IP. Since a raising verb, unlike an ECM verb, cannot assign Case, Bill must move to matrix subject position (67b).

(67) a. *it seems $[_{CP}$ e $[_{IP}$ Bill to be here]]

b. Bill seems [t [t to be here]]

In either situation, an empty head in CP is needed, for ECM constructions as a final landing site in which the subject receives Case, and for raising constructions as an intermediate landing site to facilitate long-distance movement to a position in which it can obtain Case, without bounding violations.

This provides further support for the hypothesis that ECM involves DP-movement, movement motivated by the need for Case and involving head positions as landing sites.

ECM and raising phenomena supply the two major arguments for Case assignment to the SPEC of a phrase in Barriers theory, since subjects are seen as SPECs. This in turn led to the narrow formulation of the Minimality Condition (2.2).

We are left so far with only Kayne's evidence to suggest that Case can be assigned to the SPEC of CP. The usual instances of Case-motivated movement are head-movement, perhaps with movement into the SPEC of the category in which it finds its final landing site, under the filled-SPEC-if-"specific" principle. If it is true that elements can obtain Case during movement through SPEC positions, we can account for this without Minimality if we can somehow explain why IP should be a barrier to government.

In this analysis, we have no need for the "bare IP" complement, for either raising or ECM constructions. The special lexical properties of verbs which take ECM complements in some way allow the licensing of a dummy position in the head of CP.

It has been unclear why it should be permissible in terms of structural principles, as it is in Barriers theory, to have a "bare IP" complement. Thus, it is not enough to say that certain verbs and adjectives are "idiosyncratic" in that they take IP complements; it must be explained how "idiosyncratic" heads can be in taking certain complements. At a more superficial level, a "bare IP" in the general case signals an "independent clause," not a "dependent clause," and it is difficult to see how this can be reconciled with the possibility of having IP (i.e. "independent clause") complements. Furthermore, it appears that raising is more prevalent in the world's languages than ECM constructions. It is unclear, however, how the claim that they both involve "IP complements" can account for this.

The major reason for the claim that raising constructions involve "bare IP" complements is to see that the trace of DP-movement is "properly governed," in standard theory.

(68) John seems [$_{IP}$ t to be intelligible]

But recall that we have claimed (3.6(60)) that proper government is defined as antecedent government. If this is correct, then it is irrelevant for the ECP whether seems governs t in (68) or not. Let us suppose that CP is present, i.e. that (68') has the correct structure.

(68') [$_{IP*}$ John [$_{AxP}$ [$_{VP}$ seems [$_{CP}$ [$_{IP}$ t to be intelligible]]]]

The trace t is "properly antecedent-governed" as long as nothing bars government of t by John, and we so far have no evidence that more than one LP is skipped. We have found reasons, however, for seeing IP as a barrier to government. Further, a CFP (CP) also appears to be skipped in (68'), wrongly predicting the construction to be "marginal."

Also, if VP is a barrier to government, it dominates t and does not M-command John (see (3.6(51)); therefore, antecedent-government is blocked in (68') unless both CP and AxP can be bridged.

We have rejected the notion that landing sites for DP-movement are restricted to positions which can receive Case. If DP-movement is head-movement, there is no reason why the

DP cannot move via the HEAD of CP and AxP (as long it can be argued that a dummy head position is licensed; see n.7).

(68") John $[_{AxP}$ t" $[_{VP}$ seems $[_{CP}$ t' $[_{IP}$ t to be intelligible]]]]

Returning to the "super-raising" in (63a), this instance of DP-movement might work as in (69), so that CP must be skipped, since that fills its head.

(69) John $[_{AxP}$ t^3 $[_{VP}$ seems $[_{CP}$ that $[_{IP}$ it is $[_{AxP}$ t" $[_{VP}$ expected
$[_{CP}$ t' $[_{IP}$ t be intelligent]]]]]]]

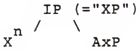
In (69), however, apparently only one LP is skipped at a time; the construction is predicted to be only marginally bad. Moreover, since the SPEC of AxP is available, there appears to be no barrier to government (LP) which does not M-command the relevant antecedent. (VP dominates t' but also M-commands t", and VP* dominates t" but M-commands t^3.) We will discuss this problem further in Chapter Five.

Seeing DP-movement as head-movement does not seem entirely implausible; it seems to have the potential to provide the distinction which used to be known as the A/non-A distinction.[8] Before we continue to defend the idea, however, we should consider how subjects could arise in the head of IP.

Notice that it is not particularly unexpected to get "a DP in the head of a DP," since the subject and the phrase which it is the subject of are the same category. But how is it possible to have "a DP in the head of IP"? That is, the theory of free projection can take care of the bar-numbering, but what allows the apparent lack of categorial "matching," which in fact departs from the core claim of X-bar theory; put one way, this claim is that a phrase of a given kind, say IP, will have a head of the same kind, I, not DP, or CP, etc.

It may be that IP is an "XP," that is "unspecified for categorial features." When it is allowed to have a dummy head position, this is an X^n. Under conditions of interpretability, any kind of phrase should be able to appear in this position as "subject" of IP.

(70)



If this line of argument turns out to be fruitful, it may be that we can allow DP-movement to the heads of IP, CP, and DP, but not to the head of AxP, because head-movement is constrained by some condition requiring the categorial features of source positions and landing sites to either "match" or "not be in conflict" (see 5.4). Then, CP can be head-bridged but AxP cannot, perhaps because CP (like DP, PP, IP) is [-V], while AxP is [+V]. Then (69') can be barred AxP is never available, and because CP is here unavailable, forcing the two VPs to be skipped in the same movement.

(69') John [$_{AxP}$ [$_{VP}$ seems [$_{CP}$ that [$_{IP}$ it is [$_{AxP}$ [$_{VP}$ expected
[$_{CP}$ t' [$_{IP}$ t be intelligent]]]]]]]

If AxP cannot be head-bridged, however, LPs must not be barriers to government, under our definition. If they are, we cannot explain the grammaticality of (68'''), which should violate the ECP--just as (69') would.

(68''') John [$_{AxP}$ [$_{VP}$ seems [$_{CP}$ t' [$_{IP}$ t to be intelligible]]]]

We will attempt to resolve some of these problems in Chapters Five and Six. Now that we have presented the idea that DP-movement is head-movement, let us reexamine the notion of "L-marking," a term we have used generally, but which can now be seen in terms of different types of "L-marking." Some lexical heads license empty heads; some license empty SPECs.

4.7 "Bridge Verbs"

A serious attempt to sort out the semantics of "bridge verbs" is beyond the scope of this work, but I would like to suggest some possibilities for further inquiry and briefly consider the different types of "L-marking." In general, it seems that "bridge verbs" might be seen as "subjective" verbs, for lack of a better term. Often seen as "epistemological," in a rather loose sense, they have to do with hopes, beliefs, percepts, the drawing in of information, hypothesizing, question, considering, and reacting to. Many of these verbs are ones which come up in the question of "gerund vs. infinitive complementation" (a simplistic labeling, of course, which ignores e.g. _that_-clause complementation). The list in Appendix A gives some idea of the kinds of verbs to which we are referring; it is drawn together from Celce-Murcia and Larsen-Freeman (1983), references cited there and my own excursions into the thesaurus.

In addition to these are some of the more commonly discussed "reporting verbs" (_say_, _hear_, _announce_), perception, etc. verbs (_see_, _read_, _hear_, _notice_), and "creating verbs") (_write_, _make_, _create_, _draw up_, etc.).

The striking thing about this list is that it is roughly corresponds to the types of verbs which take markers of "evidentiality," or "modality markers" in languages such as Japanese and Aymara (Chafe and Nichols, 1986). Briefly, certain morphemes are used to indicate whether some statement is hearsay, the reliability of the source of information, etc.

Though some languages use overt markers (see Chapter Five), English may employ abstract means of marking "modality." That is, the use of abstract feature assignment rather than subcategorization for overt markers (which are presumably C heads) may lead to the licensing of empty categories. Thus, modality marking may have some indirect effect on movement.

Further, it may be possible to link this marking for "modality" to other aspects of what we have called "specificness," as we mentioned in (4.1). First, it is possible that the specific type of modality indicated is irrelevant for L-marking; simply casting any doubt on a statement's facthood is enough to make it "nonspecific." In this way, modality-marking has structural effects just as theta-marking does, but the specific modality is irrelevant just as the specific type of theta-role involved is irrelevant to the determination of "theta-positions."

"Bridge verbs" would then be generally those "predicative" elements ([+V]) which introduce some "modality" on their complements, rendering them "open to question," and, at the same time, licensing a dummy position which facilitates movement.

There is no obvious reason why such semantic considerations SHOULD have some overt effect on the structural architecture of a complement. But there are indications that there is some effect, though quite indirect.

Thus it cannot be stated that extraction is allowed only out of a complement which is "L-marked" by a given "bridge verb." To state this as a general principle would be to rule out who did you destroy a picture of, by our analysis, as well as all extraction out of adjunct and subject phrases. We will discuss how this structural effect might work in more detail in Chapter Five.

Bridge verbs seem to differ as to whether they "L-mark" different categorial types of complements. For example, the "favoring or opposing verbs" in (71) (see Appendix) apparently allow bridging of "gerundive" but not "true DP" complements.

(71) a. what did they promote doing
b. *what did they promote a book about

If certain predicative elements are "bridge verbs" only with respect to a given type of complement, there is further evidence that semantic and structural factors interplay.

So far the few nonbridging verbs we have discussed include destroy and murmur (cf. also burn, shout, etc.). The second type is more interesting than the first since it can conceivably take a complement with "propositional content," and it could be argued that murmur also introduces the general "subjective" element we have referred to as "being a bridge verb." Yet murmur does not "L-mark" (or render "nonspecific") its clausal complement.

An interesting thing about constructions with "murmur verbs is that they too exhibit degrees of grammaticality in different types of extraction. If "L-mark" meant simply "license crossing," (that is, if we could explain grammatical extraction with a simple semantic principle that barred extraction from "specific" phrases), (72) and (73) should be equally ungrammatical.

```
                    yell
(72)  ?what did he [ murmur [ for you to [ t [ do ...
                  VP       CP            AxP  VP

                    yell
(73)  *what did he [ murmur [ that you should [ * [ do ...
                   VP       CP                AxP  VP
```

"Murmur verbs" appear to better tolerate extraction from a nonfinite complement. We can account for this in our theory in the following way. If tensed clauses have a filled SPEC of AxP, AxP must be skipped in (73). Since murmur verbs do not "L-mark," CP must be skipped (in both (72) and (73)). This forces the skipping of the two VPs in (73), while (72) gives marginal results, with one (argument) CFP being skipped.

We then tentatively claim that a "bridge verb" assigns some "modality" feature to the SPEC of its complement. If that SPEC is "already filled," there is no opening for the bridging of that phrase. If the governor is not a bridge verb, no dummy SPEC is possible. But if there is both a bridge verb and no overt SPEC, a dummy SPEC position can be licensed.

There appear to be somewhat different things going on with the verbs which "license" DP-movement. But there may be ways in which they "mark" their complements. First, we consider the passive verbs. One primary motivation for DP-movement is claimed to stem from the "Case absorption" properties of passive verbs.

```
(74) a. [ John [ was [ killed t ]]]
        IP    AxP    VP
```

b. [$_{IP}$ John [$_{AxP}$ was [$_{VP}$ believed [$_{CP}$ t [$_{IP}$ t to have been killed]]]]]

We have claimed that movement in (74a) skips VP, but it is unclear whether AxP is bridged or skipped. The same is true of (74b), but here the passive movement is complicated by the presence of the ECM construction. Notice that the passive in (74a) does not license bridging, unless it allows bridging of AxP. Thus it may be the ECM verb which licenses an empty head in CP, not the passive, while the passive may or may not license an empty head in AxP.

Interestingly, verbs which take ECM complements appear to be reasonable candidates for "DP-movement bridge verbs." That is, they seem to be a subset of the set of verbs which trigger wh-movement. We thus have verbs which L-mark for empty SPECs and verbs which L-mark for empty heads. In Chapter Five we will incorporate raising verbs into this analysis. Here we have simply tried to show that it seems plausible from a number of points of view to see DP-movement as head-movement.

4.8 Summary

It seems that we have met with some success in attempting to describe how various principles interact to permit bridging. First, the Projection Principle and the lexical/functional distinction, along with X-bar theory, provide for the possibility of dummy positions only in heads or SPECs of FPs. As long as no overt head or SPEC is present, these dummy positions can be licensed through various types of "L-marking."

L-marking does not serve to license an empty SPEC in a "specific phrase." We have claimed that "specific" phrases have filled SPECs, so that dummy SPECs cannot be licensed. We have defined "specificness" loosely to include the difference between finite and nonfinite clauses as well as the traditional specific vs. generic distinction for noun phrases.

We have used this notion of "specificness" to argue that "subjects," like many other determinerlike elements, appear in SPEC positions only of "specific" phrases. Otherwise, we have claimed that they orginate in head positions. We have argued that "free X-bar theory," specifically the theory of free projection (Bouchard, 1979) can accommodate this hypothesis, and that DP-movement is in fact head-movement. This led us to hypothesize that clausal ECM complements exhibit DP-movement into the head of CP, and to explore two general types of "L-marking," one which licenses empty heads and another which provides empty SPECs. Though a number of details remain to be worked out, it seems plausible to view bridging as a complex phenomenon, licensed by a number of interacting principles and structural properties.

There are various unresolved issues which we have touched on or ignored, however. Questions remain concerning the status of "subjects" and AGR. We have so far only considered an analysis in which AGR resides in the SPEC of AxP, but it may be that both subject and AGR originate in the heads of DP and IP. If so, the relation between AGR and subject would be straightforward; in effect, AGR could be seen as some sort of reflection of the subject in INFL.

A problem for our analysis of subjects as heads, however, is the status of INFL as the head of the clause. Related to this is the question of how "V-raising" works in our system, and whether it has any effect on DP-movement or not. In Chapter Five, we will attempt a more explicit account of the structure of IP, as well as a discussion of other peculiarities of this category, and of PP.

Also in Chapter Five, we will explore a somewhat different way of viewing the effect of tensed clauses on wh-movement. It combines our hypothesis that subjects (at least usually) originate in head positions with a suggestion from Denis Bouchard (p.c.) that there is an open SPEC of IP position in nonfinite clauses which could be used as a landing site for wh-movement.

We will be reminded, however, of how unresolved the issue of "L-marking" is. While it seems plausible to claim that only certain verbs "L-mark," we have already seen that they may "L-mark" one type of complement but not another. We have encountered evidence that nouns also only L-mark certain complement types. Further, as we will see in Chapter Five, it seems that some lexical heads may L-mark as a syntactic class after all.

4.9 Notes

[1] I would like to be able to test this judgment with more native Italian speakers.

[2] We implicitly reject the readjustment solution to the difference between (11a) and (11b) (see Chapter One).

[3] We will see in Chapter Five, for example, that it may be possible in English to skip an adjunct CFP.

[4] Another advantage of this analysis is that murmur extractions are barred, since two VPs are skipped.

(i) what did he # $[_{VP}$ murmur $[_{CP}$ that you should $[_{AxP}$ # $[_{VP}$ do t]]]]

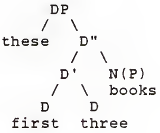
[5] There is other evidence that the head of DP may be complex, even when it is not a subject:

(i) what were you looking for $[_{DP}$ t $[_{D'}$a few] people to fix t]

(ii) a. this many houses
b. my first three books

Such "complex D heads" can be accounted for in basically the way we dealt with "complex genitives" such as (52): the "D head" is in some sense a "DP" itself, with its own SPEC.

(iii)



[6] Lacking the skills of a semanticist, I am not sure that "specific" will turn out to be a good term for what I

am trying to describe, especially given (58), in which the phrase seems to be "specific" in some sense. It may be that Guéron's (1979) ideas regarding "focus" are relevant here; perhaps such considerations interact somehow with the properties involving what we are calling "specificity."

[7] Here we seem to have to define "licensing" as a more "abstract" concept, since NP is not supposed to assign a theta-role to a dummy subject, and yet we are saying here that the dummy position is licensed as a D-max "by NP." Perhaps the licensing has to do with the POTENTIAL ability for the position to be assigned a theta-role. Or, perhaps more likely, a dummy head may be licensed as a D-max since it IS a D-n, i.e. the fact that it is a D-n seems to at least leave open the idea that it can be a D-max.

[8] Fukui (1986) discusses some of the issues concerning the A/non-A position distinction in current analyses. Since the landing sites for wh-movement and DP-movement now involve the SPECs of CP and IP, respectively, it is no longer clear how these positions differ. In our view, the A/non-A distinction is replaced by the head/SPEC distinction, and follows from our hypothesis that only FPs can have dummy positions, these positions necessarily being either heads or SPECs.

CHAPTER 5
ELABORATIONS ON THE LEXICAL/FUNCTIONAL DISTINCTION

5.1 IP as an LP-barrier

The first idea we will consider in this chapter is whether an alternative to the view that tensed clauses have a filled AxP might be viable, because it will shape our views on the status of IP and the workings of movement.

Given our hypotheses concerning subjects and DP-movement, PRO may be one of those subjects like *our* in *this our house* that can remain in the head of the FP. In this view, the SPECs of FPs would be open for bridging when the subject is PRO.

Since the clauses in which PRO shows up are nonfinite, these IPs would be bridged, while tensed IPs would have their SPECs filled (with "nominative" subjects) and would have to be skipped. (Assume here that the SPEC of AxP is available throughout, contrary to the hypothesis sketched in Chapter Four.)

```
(1)  a. what was [ John [ t [ looking [ for [ t
                 IP    AxP  VP        PP    DP

         [ someone [ WH [ t PRO-to [ t [ fix t ]]]]]]]]]
         NP*       CP*  IP^       AxP  VP

     b. *what was [ John [ t [ looking [ for [ t
                  IP    AxP  VP        PP    DP

         [ someone [ who [ T would [ t [ fix t ]]]]]]]]
         NP*      CP*   IP*       AxP  VP
```

Now, why should it matter whether IP is skipped or bridged in (1)? In Chapter Three, we found that seeing IP as an LP-barrier for bounding (rather than as no barrier or as a CFP-barrier) seemed the only plausible way in this system to account for the ungrammaticality of most extractions out of subjects, while allowing the grammatical extraction in (3), found in Italian.

(2) a. *who did [$_{\text{IP}**}$ [$_{\text{CP}*}$ that [$_{\text{IP}*}$ John [$_{\text{AxP}}$ t [$_{\text{VP}}$ criticized t]]]] bother Mary]

b. *to whom did [$_{\text{IP}*}$ [$_{\text{DP}*}$ a [$_{\text{NP}*}$ letter t]] get lost]

(3) Gianni, of whom [$_{\text{IP}*}$ [$_{\text{DP}*}$ a picture t] appeared ...

In (2), CP* and DP* are skipped as non-L-marked subjects, and this forces the skipping of two LPs at once. Subject extraction is permitted in (3) because only one CFP (DP*) and one LP (IP*) are skipped.

If IP can be claimed to be an LP in general, the ungrammaticality of (1b) and the distinction between (1a) and (1b) can be accounted for along similar lines. In (1b), two LPs are skipped at once (IP* and NP*), while IP^ in (1a) is bridged, so there is no LP-barrier violation. Let us examine other extractions which show effects of (non)finiteness on wh-movement.

(4) a. who did [$_{IP}$ John [$_{AxP}$ t [$_{VP*}$ leave the party [$_{CP*}$ before [$_{IP/DP}$ t PRO [$_{AxP}$ t [$_{VP}$ speaking [$_{PP}$ to t]]]]]]]]

b. who did [$_{IP}$ John [$_{AxP}$ t [$_{VP*}$ leave the party [$_{CP*}$ before [$_{IP*}$ he [$_{AxP}$ t [$_{VP}$ spoke [$_{PP}$ to t]]]]]]]]

Whether we consider the gerundive in (4a) to be IP or DP (following Abney, 1987), (4a) is only marginally ungrammatical, since the adjunct CP (a CFP) is skipped. On the other hand, (4b) is barred, perhaps because both IP* and VP* have to be skipped in the same application of movement. Similar situations arise in (5) and (6).

(5) a. to whom did [$_{IP}$ Bill [$_{AxP}$ t [$_{VP*}$ wonder [$_{CP*}$ what [$_{IP^{\wedge}}$ t PRO-to [$_{AxP}$ t[$_{VP}$ give T t]]]]]]]

b. *to whom did [$_{IP}$ Bill [$_{AxP}$ t [$_{VP*}$ wonder [$_{CP*}$ what [$_{IP*}$ John [$_{AxP}$ t[$_{VP}$ gave T t]]]]]]]

(6) a. who did [$_{IP}$ John [$_{AxP}$ t [$_{VP*}$ wonder [$_{CP*}$ when [$_{IP^{\wedge}}$ t PRO-to[$_{AxP}$ t [$_{VP}$ consider [$_{CP}$ t' t [$_{IP}$ T to be intelligent ...

b. *who did $[_{IP}$ John $[_{AxP}$ t $[_{VP*}$ wonder $[_{CP*}$ when

$[_{IP*}$ he should $[_{AxP}$ t $[_{VP}$ consider $[_{CP}$ t" t' $[_{IP}$ t

to be intelligent ...

In (6), the first movement is DP-movement, from the head of IP to that of CP; this constitutes ECM constructions, we have claimed. The first landing site for wh-movement is t'. In (6b), IP* and VP* must be skipped at one time, giving ungrammatical results, but IP^ is bridged in (6a), and (6a) is only marginal, since CP* skipped.

We have other possible evidence that IP acts as an LP-barrier. If IP is an LP, and LPs are barriers to government, we can account for the marking of Case on subjects in embedded clauses. In the nonexceptional situation, the embedded subject resides within IP, and there it is impervious to Case-assignment from the outside.

(7) a. John believes $[_{CP}$ (that) $[_{IP}$ she is intelligent]]

b. *John believes $[_{CP}$ (that) $[_{IP}$ her is intelligent]]

Exceptional Case-marking clauses, on the other hand, would have the subject moved into the head of CP, to get out of the way of the IP barrier, so that the DP could receive Case from the higher verb.

(8) John believes $[_{CP}$ her $[_{IP}$ t to be intelligent]]

Seeing IP as an LP-barrier would thus support the theory that LPs are barriers at least to head-government (see (2.9)). There are still problems, as we have discussed, with antecedent-government, which we will address again in Chapter Six.

Now that _wh_-movement seems to involve available SPECs of IP, we have a fairly complete picture of _wh_-movement as "SPEC-movement," i.e. movement which employs SPEC landing sites. We can now attempt to define "proper movement" (cf. Chomsky 1986b:73), i.e. to address concerns which led to the "COMP-to COMP condition" and then to the "A/non-A position" distinction (see Ch.3:n.7). This notion really serves to keep _wh_-movement and DP movement out of each other's way, so that they can occur together as in (9), but not as in (10) (see Bouchard, 1985; van Riemsdijk and Williams, 1986).

(9) a. what does John seem to like
b. who is expected to like John
c. who is expected to be liked
d. who does John seem to expect to be intelligent

(10) *which books were asked to buy

First, we have claimed that a lexically realized subject, unlike PRO, fills the SPEC of IP, such an IP being "specific" in some sense. We have discussed how this normally does not provoke movement of any sort, since the "filled-SPEC principle" must hold before rules of "move alpha" apply or it will not affect _wh_-movement, and yet "move alpha" must operate freely.

It is not clear, however, whether elements moved into a new subject position through DP-movement then move into the SPEC of that IP. That is, it might be a condition on both D-structure and S-structure ("core" syntactic representations) that "specific" phrases must have filled SPECs. If so, the movements to SPEC "on the outskirts" of DP-movement (e.g. from the position of t" in (11) to that of *John*) might be seen as a kind of local SPEC-movement ("*wh*-movement").

(11) $[_{\mathrm{IP}}$ John t" $[_{\mathrm{AxP}}$ $[_{\mathrm{VP}}$ seems $[_{\mathrm{CP}}$ t' $[_{\mathrm{IP}}$ t to be intelligent]]]]]

Following this analysis, we may continue to assume that DP-movement itself is head-movement, and illustrate "proper movement" with the representations in (9'). (Ts are traces of "head-movement;" ts are traces of "SPEC-movement." We may assume that, for example, *John* in (9a') moves into the SPEC of IP* at the end of its DP-movement, movement not indicated in (9') for relative simplicity).

(9') a. what does $[_{\mathrm{IP}}$ John $[_{\mathrm{AxP}}$ t T $[_{\mathrm{VP}}$ seem $[_{\mathrm{CP}}$ t T $[_{\mathrm{IP}}$ t T-to $[_{\mathrm{AxP}}$ t $[_{\mathrm{VP}}$ like t]]]]]]]

b. who $[_{\mathrm{IP}}$ t T is $[_{\mathrm{AxP}}$ T $[_{\mathrm{VP}}$ expected $[_{\mathrm{CP}}$ T $[_{\mathrm{IP}}$ T-to $[_{\mathrm{AxP}}$ like John]]]]]]

c. who [$_{IP}$ t T is [$_{AxP}$ T [$_{VP}$ expected [$_{CP}$ T [$_{IP}$ T-to

[$_{AxP}$ be [$_{VP}$ liked T]]]]]]]

d. who does [$_{IP}$ John [$_{AxP}$ t T [$_{VP}$ seem [$_{CP}$ t T [$_{IP}$ t

T-to [$_{AxP}$ t [$_{VP}$ expect [$_{CP}$ t T' [$_{IP}$ T'-to be

intelligent]]]]]]]]]

The "COMP-to-COMP condition" may be reducible to a requirement that "SPEC-movement," such as wh-movement, always involves SPEC landing sites. We will call this "X-to-SPEC" movement, and it should be able to include the "head-to-SPEC movement," as a variant, which we have just discussed. DP-movement involves head-to-head movement. The structure (10') may be ruled out because SPEC-to-head movement (here represented as movement from t* to T*) is disallowed.[1]

(10') *which books [$_{IP}$ t T were [$_{AxP}$ T* [$_{VP}$ asked [$_{CP}$ t* [$_{IP}$ t

PRO-to [$_{AxP}$ t [$_{VP}$ buy t]]]]]]]

The prohibition against "SPEC-to-head movement" might be one aspect of a more general condition which requires "uniformity" of landing sites.

In this sense, what we have been calling "SPEC-movement" must be SPEC-to-SPEC movement, if we ignore the initial movement from some X to SPEC. While a number of different types of elements can participate in SPEC-SPEC movement (i.e. both arguments and adjuncts can be wh-moved), "head-movement" seems to always originate from head positions. Such a view makes head-movement in tough-constructions impossible, because the element moved is not a head (i.e. a subject).

Generally, it makes some sort of conceptual sense to see movement as sensitive to the structural positions of open landing sites. We will show here that such a restrictive theory of movement, based on the distinction between "head-movement" and "SPEC-movement," may be able to handle tough-constructions (e.g. (12a)), which have presented recalcitrant problems for many theories over the years. They are relevant to the notion of "proper movement" because it is thought that the movement in (13) is barred for basically the same reasons that we have barred (10'), because (in our terms) there can be no SPEC-to-head movement (the more traditional representation illustrating the "COMP-to-COMP condition is given in (13b).

(12) a. this book is easy to read
b. it is easy to read this book
c. to read/reading this book is easy

(13) a. *[$_{IP}$ this book [$_{I'}$ T [$_{AxP}$ t is [$_{DegP}$ t easy [$_{CP}$ t [$_{IP}$ t to
[$_{AxP}$ t read t]]]]]]]

b. *[$_{S}$ this book is easy [$_{S'}$ t for [$_{S}$ them to read t]]]

The standard analysis of (12a), therefore, is that this book is base-generated in the matrix subject position, with a kind of empty operator movement occurring in the lower clause.

(13') this book is easy [O_i [PRO to read t_i]]

One reason this analysis makes sense is that *tough*-constructions exhibit observance of bounding principles (e.g. *wh*-island effects; cf. Chomsky, 1981b, 1986a, 1986b, etc.), and therefore they seem to involve *wh*-movement. Yet it is disturbing that this book is base-generated in what appears to be a non-theta-position in (13'), if we go by fairly reasonable assumptions that the examples in (12) are closely related in meaning and structure.

Our analysis of *tough*-constructions goes as follows. These are not instances of "Case-motivated movement," and they are not instances of "head-movement," despite the fact that it looks as if this book moves into what we have analyzed as the head of IP (its subject), and perhaps then to its SPEC. Rather, we will claim that these are instances of SPEC-movement, as Chomsky has along somewhat different lines, but that such movements properly involve only the SPEC of IP, not its head.

In this type of movement, it may be possible to move through the SPEC of AxP (as well as SPECs of CP, DegP, etc.), just as in any SPEC-movement. What would be "marked" about the construction is that the phrase which moves into the SPEC of IP is presumably coindexed with the "true subject" position--the head of IP. Otherwise, this is a grammatical structure with "proper" movement.

(13") $[_{IP}$ this book$_i$ $[e]_i$-is $[_{DegP}$ t $[_{AP}$ easy $[_{CP}$ t for $[_{IP}$ them
to $[_{AxP}$ t $[_{VP}$ read t]]]]]]]

Turning to head-movement, as we have seen, we cannot simply maintain that Case-motivated movement will involve no head landing site which has no chance of getting Case--therefore ruling out movement through AxP in general and through CPs and DPs not governed by a Case assigner. This is questionable in the face of (14), which needs to be able to bridge CP; if CP is skipped, this alone wrongly brings about a weak bounding violation.

(14) John was $[_{AxP}$ $[_{VP}$ believed $[_{CP}$ t $[_{IP}$ t
to be intelligent]]]]

Here is evidence that considerations of "Case-motivation" alone cannot determine permissible landing sites for DP-movement. Rather, we will suggest that DP-movement, and head-movement in general, is category-sensitive; "clausal" DP-movement involves heads of IPs and CPs (and DPs; cf. (3.4(35)). Passive, raising and ECM would all involve the same sorts of landing sites in a certain type of structure.

Let us consider the hypothesis that landing sites for DP-movement are limited to positions of certain categorial types, and, particularly, do not include dummy heads in AxP (perhaps because AxP is [+V], unlike CP, IP (by standard assumptions both [-N, -V]),[3] or DP (which is presumably [+N, -V]). "Super-raising" constructions can be accounted for if AxP is unavailable; VP* and IP* must be skipped in the same movement in (15).

(15) $[_{IP}$ John $[_{AxP}$ # $[_{VP}$ seems $[_{CP}$ t $[_{IP*}$ it is $[_{AxP*}$! $[_{VP*}$ considered
$[_{CP}$ t $[_{IP}$ t to be intelligent]]]]]]]]]

Notice that (15) is ungrammatical in spite of the fact that both CPs are assumed to be bridgeable, neither of them containing that in their heads. The crucial point is that an "intermediate" IP such as IP* in (15) must have an open head so that such an IP can be bridged during this DP-movement. Thus, if IP is an LP-barrier, (15) suffers from having two LPs (VP* and IP*) skipped at one time.[3]

(16) $[_{IP}$ John $[_{AxP}$! $[_{VP}$ seems $[_{CP}$ t $[_{IP\hat{}}$ t-to $[_{AxP*}$ be $[_{VP*}$ considered
$[_{CP}$ t $[_{IP}$ t-to be intelligent]

The idea that DP-movement, and head-movement in general, is category-sensitive may account for its seeming "lack of productivity" within DP, which has moved some linguists to propose that there is no DP-movement within DP.

(17) *$[_{DP}$ John's $[_{NP}$ appearance $[_{CP}$ t $[_{IP}$ t to have left]]]]

We have evidence from (18) that nouns can "L-mark" at least clausal complements, so we cannot rule out (17) by claiming that the N cannot L-mark CP, forcing the skipping of CP. But we can account for the unavailability of CP with the notion of the "category-sensitivity" of head-movement. Using the standard feature notation, (17) is barred because the final landing site is in the head of DP, which is [+N, -V], and the intermediate C landing site is [-N, -V]. In other words, a dummy C head is not a suitable landing site for DP-movement within DP, because these landing sites must be [+N] (while perhaps landing sites for clausal DP-movement must be [-V]). This would also account for (18), i.e. why there is no raising out of "ECM" structures into the head of DP; in (18) the head of CP is not a permissible landing site, and IP and NP must be skipped during the movement.

(18) *$[_{DP}$ John's $[_{NP}$ belief $[_{CP}$ # $[_{IP}$ t to have left]]

There appears to be some support for this analysis from a cursory view of "V-raising phenomena" (Rizzi, 1982; Chomsky, 1986b). "V-raising" appears to be another kind of head-movement which travels along a path at least somewhat separate from that of "DP-movement." Thus, it has been argued that V-raising involves heads of I and C, and in our system at least, Aux. These may be claimed to be a "natural class" of syntactic categories; they are all [-N], for example. The details of this analysis and of a proposed feature system await our analysis of PP, to which we turn in (5.4). We can simply note at this point that the standard feature system could account fairly easily for why both V-raising and DP-movement can involve head positions in IP and CP, since these two categories are [-N, -V].[4]

So far, a fairly consistent theory has been developed, based partially on the claim that IP is an LP. If this is true, IP would be a different kind of "LP" in that it can be bridged. In this sense, we might say that it is an "LFP," exhibiting both lexical and functional properties.[5]

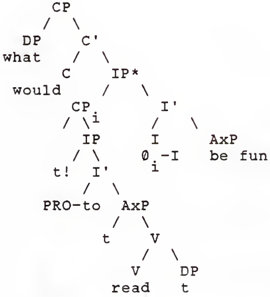
If the SPEC of IP is available for wh-movement, we must explain why IP is not bridgeable in (19).

(19) *what would [$_{IP*}$ [$_{CP*}$ [$_{IP}$ t PRO-to [$_{AxP}$ t [$_{VP}$ read t]]]] be fun]

First, we should say that the SPEC of IP* could easily be claimed to be filled with the (non-PRO) CP* subject, so IP* must have to be skipped (see (20)). We have already claimed that CP is unbridgeable in instances such as these because a CFP must be "L-marked" to be bridgeable. But the fact that PRO can remain in the head of IP leaves open the possibility that the SPEC of IP could be used for wh-movement. With IP bridgeable, (19) is incorrectly predicted to be only marginally ungrammatical, since only one CFP (CP*) and one

LP (IP*) would be skipped. In other words, it must be determined at what times IP can be bridged, and the situation in (19)/(20) is apparently not one of them.

(20)



Something must block the bridging of this IP (i.e. disallow the presence of t! in (20)).

We cannot say that IP cannot be bridged unless it is L-marked because by our assumptions IP is never L-marked; it "stands alone" with declarative matrix clauses, or it is a complement of C, an F. Notice that we are assuming that the Barriers notion of "L-marking" is essentially correct, in that whatever other properties a "bridge verb" must have, it must be "lexical" not "functional," and that C is "functional." As a first approximation, we might hypothesize that IP's bridgeability depends on whether its CP is "L-marked." That is, as an LP, IP must "inherit" its bridgeability from that of its FP, loosely speaking, but even when its FP must be skipped, as long as it is L-marked, IP can be bridged.

(21) IP is bridgeable if it is the complement in
a CP which is L-marked.

Thus, IP cannot be bridged in (19) because its CP is a subject, and is thus not L-marked.

Notice IP is bridgeable even when CP not bridgeable, as long as CP is L-marked. In (5) and (6), repeated below, IP$^\wedge$ is bridged even though the SPEC of CP* is filled with a _wh_-word, so that CP* must be skipped.

(5) a. to whom did [$_{IP}$ Bill [$_{AxP}$ t [$_{VP*}$ wonder [$_{CP*}$ what
[$_{IP^\wedge}$ t PRO-to [$_{AxP}$ t [$_{VP}$ give T t]]]]]]]

b. *to whom did [$_{IP}$ Bill [$_{AxP}$ t [$_{VP*}$ wonder [$_{CP*}$ what
[$_{IP*}$John [$_{AxP}$ t [$_{VP}$ gave T t]]]]]]]

(6) a. who did [$_{IP}$ John [$_{AxP}$ t [$_{VP*}$ wonder [$_{CP*}$ when
[$_{IP^\wedge}$ t PRO-to [$_{AxP}$ t [$_{VP}$ consider [$_{CP}$ t' t [$_{IP}$ T
to be intelligent]]]]]]]]]

b. *who did [$_{IP}$ John [$_{AxP}$ t [$_{VP*}$ wonder [$_{CP*}$ when
[$_{IP*}$ he should [$_{AxP}$ t [$_{VP}$ consider [$_{CP}$ t" t' [$_{IP}$ t
to be intelligent ...]]]]]]]]]

However, (21) cannot account for the apparent capacity to bridge IP in (1a), as well as in (4a), repeated below.

(1) a. what was $[_{IP}$ John $[_{AxP}$ t $[_{VP}$ looking $[_{PP}$ for $[_{DP}$ t
$[_{NP^*}$someone $[_{CP^*}$ WH $[_{IP^{\wedge}}$ t PRO-to $[_{AxP}$ t $[_{VP}$ talk to T
$[_{PP}$ about t]]]]]]]]]

(4) a. who did $[_{IP}$ John $[_{AxP}$ t $[_{VP^*}$ leave the party $[_{CP^*}$ before
$[_{IP/DP}$ t PRO $[_{AxP}$ t $[_{VP}$ speaking $[_{PP}$ to t]]]]]]]]

We then posit (22), which "localizes" Kayne's hypothesis, (cf. Kayne, 1984) that L-government is related directly to extractability, to the bridgeability of IP.

(22) IP is bridgeable if it is the complement
in a CP which is L-governed.

That is, even when CP is unbridgeable because it is not L-marked, its IP is bridgeable as long as CP is L-governed. This allows (1a), (4a) but still bars (20).

We have tried to show that it seems plausible that the SPEC of IP is open in nonfinite clauses, so that IP can be wh-bridged, and that IP is an LP-barrier. We have shown how this hypothesis has the potential to bring a number of extraction phenomena together, including the "islandhood" of subjects, the effects of finiteness on wh-movement, and Case assignment to subjects of embedded clauses.

At the same time, IP seems to be a quite curious category, in that it has both functional and lexical properties. Like an FP, it apparently can be bridged, yet it behaves as an LP-barrier. Also, it seems to have be bridgeable under conditions slightly different from those under which "true FPs" are bridged, in that L-marking is irrelevant, in our theory. We will discuss the status of IP further in (5.4) and Chapter Six.

5.2 PP

We will take a rather roundabout route to try to discover the properties of PP in this section. Our reasons for this revolve around the following problem: We have claimed that English is only marginally allows this skipping of a CFP, and that it is easier to skip an adjunct CFP than an argument CFP. We will illustrate that PPs also differ with respect to how they are crossed, depending on their status as "arguments or adjuncts." Admittedly, at times this distinction is difficult to apply, but we will attempt an account of the relatively clearer cases, and let the theory decide, following common practice.

We have claimed that a CFP must be "L-marked to be bridgeable, in the sense that it must be theta-marked by a certain kind of lexical category. Only certain verbs appear to L-mark in this way. It is difficult to tell whether nouns L-mark, but we have encountered at least one construction which seems to indicate that some Ns "L-mark."

(23) what did she t have t these [$_{NP}$ dreams [$_{CP}$ t that [$_{IP}$ she would t do t]]]

If CP were unbridgeable, both IP and NP would have to be skipped in the same movement, evidence that at least clausal noun complements are "L-marked." It is not clear that nouns do not L-mark their relative clauses, since the SPECs of these CPs are presumably always filled with the wh-element (even when it is not phonologically realized, as in (24)).

(24) what were you looking for [$_{DP}$ t a [$_{NP}$ woman [$_{CP*}$ WH [$_{IP^\wedge}$ t T-to t fix t]]]]

Notice that IP^ must be bridgeable here, or else IP^ and NP would be skipped at once. This contrast between noun complements and noun relatives presumably accounts for why it is sometimes possible to extract out of tensed clausal complements of nouns, as in (23), but never out of tensed relative clauses.

(25) *what were you looking for [$_{DP}$ t a [$_{NP}$ woman [$_{CP}$ who [$_{IP}$ T-would [$_{AxP}$ t [$_{VP}$ fix t]]]]]]

Whatever the status of CP in (24) and (25), it must be skipped. We have proposed that standard English disallows the skipping of any CFPs, but that skipping one CFP is simply a "weak bounding violation," and yet (24), which involves the skipping of one CFP, does not appear to be even "marginal." The difference between the Rizzi examples we have discussed (such as (26)) and (24) is that an adjunct CFP is involved in the latter.

(26) John, of whom [$_{IP}$ [$_{DP*}$ pictures t] are on sale]

We may tentatively hypothesize that English allows the skipping of one adjunct CFP in a given extraction, but we will assume that two cannot be skipped.

Though the question whether adjunct phrases are "L-marked" is irrelevant for (24) and (25), i.e relative clauses (since the SPEC of CP is already filled, whether "L-marked" or not), it might be crucial for extraction out of adjunct PP, since PP presumably has no wh-element filling its SPEC. If an adjunct CP can be skipped, as (24) indicates, it may also be possible to skip an adjunct PP, depending on our analysis of PP, as in (27).

(27) a. which car did [$_{IP}$you [$_{AxP}$ t [$_{VP*}$ ride [$_{PP*}$ in t]]]]

b. who did [$_{IP}$you [$_{AxP}$ t [$_{VP*}$ send a letter [$_{PP*}$ from t]]]]

In general, the nature of PP as "functional or lexical," as well as the question whether it can be L-marked, should have consequences for what is considered grammatical extraction out of PP, as well as out of argument and adjunct phrases in general. Two related phenomena which we will consider are P-stranding and extraction out of argument and adjunct PPs. We must keep in mind, from evidence from (24) and (27), that it seems to be grammatical in standard English to skip one adjunct phrase. Before we can tackle the data, however, we must have some theory about what PP is, and some notions concerning the possible distinction between "adjunct" and "argument" PP.

If PP is an LP, and is always skipped, then P-stranding should never be grammatical, since two LPs would be skipped in what turn out to be grammatical instances of movement in English. In (27), for example (repeated below), both PP* and VP* (two LPs, by this analysis) would be skipped at once. In general, it should be impossible to extract out of any PP that is a complement or an adjunct of a lexical head.

(27) a. which car did [$_{IP}$ you [$_{AxP}$ t [$_{VP*}$ ride [$_{PP*}$ in t]]]]

b. who did [$_{IP}$ you [$_{AxP}$ t [$_{VP*}$ send a letter [$_{PP*}$ from t]]]]

It seems a small favor that seeing PP strictly as an LP in English would correctly predict the ungrammaticality of (28) (see Chomsky, 1986b), if both PP* and IP* are skipped at once.

(28) *John, who [$_{IP*}$ [$_{DP*}$ a [$_{NP}$ picture] [$_{PP*}$ of t]] is on sale]

It might be that PP, like IP, is an LP that is bridgeable, but unless its ability to be bridged is restricted, (28) will be incorrectly predicted to be grammatical. By our analysis, PP in (28) is not L-marked, being theta-marked by NP rather than N; perhaps this is why it is not bridgeable. Then whether or not PP is an LP-barrier, (28) can be barred (either because two LPs--PP* and IP*--or two C-Ps--PP* and DP*--are skipped). On the other hand, PP^ might be bridgeable in (29) because it is "L-marked" by V.

(29) who did $[_{\mathrm{IP}}$ you $[_{\mathrm{AxP}}$ t $[_{\mathrm{VP}}$ speak $[_{\mathrm{PP}\hat{}}$ t to t]]]]

Generally speaking, we can take argument PPs to be any "genitive," "indirect object," or related PP.

There are a number of problems with the view that PP is an LP that can be bridged in English (and other P-stranding languages) when it is L-marked. First, it looks as if we are treating PP as an "LP which is a CFP." Unlike IP, which we have claimed is always F-marked by C, PP apparently has no distinguishable functional head of which it is the complement (see below); the possibility that it is "L-marked" is then open, but it is difficult to see why L-marking should be relevant to PP if it is an LP. Another problem is that the analysis predicts that there should be no bridging out of adjunct PPs, since these are not L-marked, incorrectly predicting the examples in (31) to be "strongly" ungrammatical, since two LPs are skipped.

(30) a. which car were you t [$_{VP}$ riding [$_{PP}$ in]]]]

b. who did you t [$_{VP}$ leave the party [$_{PP}$ before t PRO t speaking t to t]]]

As we will soon see, we cannot claim that all PPs are bridgeable in English because the marginal and ungrammatical cases of extraction out of PP would be unaccounted for.

We have just claimed that PP is "bare," i.e. that it does not appear to be the complement of some F head. There are two important indications of this. First, let us consider the idea that PP is immediately dominated by some FP, call it PhP. PhP cannot be an FP, or it would be freely bridgeable, like AxP (we have assumed). If PhP were a CFP, we would expect P-stranding to be more common than it is. Argument PhPs (at least) should be bridgeable in Italian (and "marginal" English, etc.), which can skip one CFP. Second, it is unclear what kind of F could be singled out as a "head of the prepositional phrase." This is unlike NP, VP, AP, and IP, all of which seem to have their own special FPs: DP, AxP, DegP, and CP, respectively. The examples in (31) (see Jackendoff 1977, van Riemsdijk 1978) illustrate some of the "specifier-like" elements which are associated with PP.

(31) a. right up the hill
b. only/just around the corner
c. far down the road
d. two miles down the road

None of these once-called specifiers seems distinctive categorially or as an F(P) only associated with PP.

Let us now consider whether PP could be a "bare" CFP. First, we face empty-handed the same question that we had when it was a complement of some F, namely, the issue of why P-stranding is rare if PP is simply a CFP. Another (more theory-internal) problem is that we have difficulties predicting the grammaticality of (32), since the PPs are not L-marked and therefore presumably must be skipped.

(32) who did you t $[_{VP}$ see $[_{DP^{\wedge}}$ t copies $[_{PP^{**}}$ of $[_{DP}$ t pictures $[_{PP^{*}}$ of t]]]]]

First, let us assume that the DPs in (32) are bridgeable because they are L-marked. This seems plausible since *see* could L-mark DP^ and the P *of* could "L-mark" DP. That *see* L-marks DP^ is supported by (33), in which it seems that DP^ must be bridgeable, since PP* is not L-marked and must be skipped; otherwise two C(F)Ps (PP* and DP*) would be skipped.

(33) what did you t $[_{VP}$ see $[_{DP}$ t copies $[_{PP^{*}}$ of t]]]

The problem lies with (32), because here two PPs, by this analysis two (argument) CFPs, are skipped, since neither is L-marked. Curiously, analyzing PP as an LP-barrier would alleviate the problem, since only one PP is skipped "at a time" in (32).

The fact that PP exhibits properties both of LPs and CFPs within English constitutes strong evidence against saying that P-stranding arises from setting a parameter to make PP a CFP, rather than an LP. First, such a parameter would seem to do little to predict the rarity of P-stranding; if "languages have a choice" of treating PPs in one way or the other, why do they so often "choose" just one of these ways? In this sense, the idea is unrevealing. Secondly, there appear to be problems of a more empirical nature within English, not only because PP seems to show LP-like properties in (32), indicating that it is not simply a CFP, but also because in the same language PP shows properties like those of CFPs. For example, it seems reasonable to say that (34) is ruled out because the two PPs are skipped.

(34) which table did you t leave letters $[_{PP}$ in $[_{DP}$ t a $[_{NP}$ book $[_{PP*}$ on t]]]]

But since DP in (34) is bridged (i.e. we can argue that it is nonspecific, and perhaps L-marked by P), the two PPs are skipped in separate movements, suggesting that CFP-like barriers are involved. This is in direct contrast to (32), where it looks as if PPs are acting as LP-barriers. Notice that we do not want to say that PP* in (34) is an

LP-barrier, because this would rule out (35), basically Ross's example.

(35) which signs does $[_{IP}$ the committee $[_{AxP}$ t $[_{VP}$ prescribe
$[_{DP}$ t the height $[_{PP}$ of $[_{DP}$ t the $[_{NP}$ lettering
$[_{PP*}$ on t]]]]]]]]

A PP that is adjunct to a noun does not seem to act as an LP-barrier, since if it were (35) would be barred because PP* and NP are skipped at once. However, PP^ may behave as an LP (i.e. as an argument PP), its status unclear since skipping it entails no violation anyway, sandwiched as it is by bridging.

It may be worth noting that although Jackendoff (1977) and many others have included PP as a category which participates in X-bar theory, Chomsky did not explicitly include them, to my knowledge, until the mid 1980's. Consider (36), from Chomsky (1981b:48).

(36) X['] ---> ... X ... (X = [+N ±V] or [+V ±N])

In current theories which generalize X-bar theory to "nonlexical categories" such as C, I (e.g. Barriers theory, our theory), it cannot be argued that P is "lexical" because it exhibits nuclear structure, since "nonlexical" phrases also do so. It has been claimed that some Ps are "not really Ps" in the sense that they are not the heads of what appear to be prepositional phrases; cf. of-insertion. It is well known that some Ps have more semantic content than others, and that the "more functional" ones are lost in agrammatic aphasia while the more "contentful" ones are preserved. Abney (1987) and others have suggested that really two categories are involved. However, all of this seems to have little directly to do with the status of PP as an "island" (or nonisland) for movement. P-stranding is not restricted only to what have been thought to be the more "functional" PPs. It is extremely doubtful that languages without P-stranding have only "contentful" PPs which are all preserved in agrammatic aphasia. Yet the fact that PP seems to have questionable status in yet another aspect does seem to have some bearing on the analysis of PP as an FP, an LP, or something else. In fact, our discussion seems to point out ways in which PP seems to be atypical as an FP or an LP.

Let us explore the idea that PP is "something else." First, it seems that PP must be an "LP" of some kind in languages which do not tolerate P-stranding. The reason for this is that PP is not a strong enough barrier as a CFP, in cases where the CFP is L-marked, to block P-stranding, since they should be bridgeable in such cases. PP is a special kind of "LP" in a number of ways. As we pointed out earlier, it does not seem to be the kind of LP which must be the complement of a nonlexical head. It can therefore "stand alone" and be assigned a "theta-function" directly, unlike NP, IP, and AP. P, like I (in the case of modals), may have "inherent content," like an LP, but it also has "syntactic content," like DP, CP, etc. Therefore, let us call PP a "CLP."

In most languages, PPs are treated as LPs, and P-stranding is not grammatical. But perhaps in English PP is generalized as a "C-P." PP would thus behave like a CFP, at least in certain ways, as a phrase assigned "theta-function content" even though it is "lexical." We might expect, for example, that PPs can be bridged only if they are L-marked. This should be testable in English, since it is possible to extract both from argument and adjunct PPs; we should find it easier to extract from those which are L-marked than from those which are not. Consider (37), for example.

(37) who did you t $[_{VP}$ give the book $[_{PP\text{^}}$ t to $[_{DP}$ t friends $[_{PP*}$ of t]]]]

It is reasonable to suppose that PP^ is "L-marked" by the verb *give* and is thus bridgeable, and that DP is L-marked by the P *to*, but that PP* is not L-marked and therefore must be skipped. Then (37) should be "marginal" because one argument C-P is skipped. However, as we noted earlier, a PP such as PP* does not appear to behave as a C-P barrier in any case, because of the grammaticality of (32), repeated below.

(32) who did you t [$_{VP}$ see [$_{DP\hat{}}$ t copies [$_{PP^{**}}$ of [$_{DP}$ t
pictures [$_{PP^{*}}$ of t]]]]]

In (32), both PPs are skipped. If these are to be treated as C-P barriers, (32) should be ungrammatical, since by our theory two C-Ps can never be skipped (whether "at once" or not).

One apparent solution is to claim that all argument PPs are bridgeable, even when they are not L-marked, as in (32) and (37). But a problem with this claim is that PP in (38) would then be bridgeable as well, falsely predicting no difference between (38) and (39) (see (28) and (29), respectively).

(38) who were [$_{IP^{*}}$ [$_{DP^{*}}$ pictures [$_{PP}$ t' of t]] on sale

(39) of whom were [$_{IP^{*}}$ [$_{DP^{*}}$ pictures t] on sale

Another alternative is to say that PP behaves as an LP-barrier when it is an argument, but as a C-P barrier when it is an adjunct. Then (38) would be ruled out because two LP-barriers (PP and IP*) would have to be skipped at once, since neither DP* nor PP can be bridged. Extraction in (32) (repeated below) would be grammatical because only one LP-barrier is skipped at a time.

(32) who did you t [$_{VP}$ see [$_{DP^{\wedge}}$ t copies [$_{PP**}$ of [$_{DP}$ t pictures [$_{PP*}$ of t]]]]]

For similar reasons, (37) (repeated below) is grammatical; even though PP* is skipped, it is the only LP skipped in its cycle.

(37) who did you t [$_{VP}$ give the book [$_{PP^{\wedge}}$ t to [$_{DP}$ t friends [$_{PP*}$ of t]]]]

On the other hand, (38) would be ruled out because neither DP* nor PP can be bridged, since neither is L-marked. Because PP is an argument it behaves as an LP-barrier and two LPs are thus skipped at once (PP and IP*).

In (34) (repeated below), however, skipping two PPs in two different cycles gives ungrammatical results because both PPs are adjuncts, and these two C-P barriers are skipped.

(34) which table did you t leave letters [$_{PP*}$ in [$_{DP}$ t a [$_{NP}$ book [$_{PP*}$ on t]]]]

At the same time, (35) is grammatical because only one (adjunct) C-P is skipped. Recall that PP* cannot be an LP-barrier here, or two LPs would be skipped at once.

```
(35) which signs does [ the committee [ t [ prescribe
                      IP              AxP  VP

          [ t the height [ of [ t the [ lettering
          DP             PP   DP      NP

          [ on t ]]]]]]]
          PP*
```

This analysis predicts that extraction out of "more than one" adjunct phrase should be ungrammatical in any language, just as we have assumed that skipping two argument C-Ps is ungrammatical. The hitch here is that when PPs are arguments, they are not treated as C-P barriers, and therefore more than one argument PP can be skipped, as long as this is not done in one cycle. Still, the PPs which act as LP-barriers behave as C-Ps in that they can be bridged if they are L-marked. This accounts for the grammatical (though marginal) character of the extractions in (40).

```
(40)  who did you t leave [ before [ t PRO [ t
                          PP*      IP/DP   AxP

          [ speaking [  t to t ]]]]]
          VP         PP^
```

An analysis of (41) is a bit shakier because of the even more uncertain categorial status of "participials." (If YP = DegP, for example, there is no XP, and YP is not bridgeable; here we assume XP = CP, YP = IP).

```
(41)  what did you t leave [   [ t PRO [ t
                          XP  YP      AxP

          [ laughing [ t at t ]]]](])
          VP         PP^
```

In either case, however, (41) is predicted to be either fully grammatical, or marginal in the same way that (40) is, since PP^ is bridgeable.

These constructions would then be on a par with (24), repeated below, in that one CFP would be skipped. (In (40), this would be an argument CFP; in (41), an adjunct CFP).

(24) what were you looking for $[_{DP}$ t a $[_{NP}$ woman $[_{CP*}$ WH $[_{IP^\wedge}$ t T-to t fix t]]]]

A problem for this analysis is that it predicts constructions such as (42) to be ungrammatical in languages which do not allow P-stranding, since two LPs (PP* and VP*) would be skipped at once.

(42) who did you $[_{VP*}$ leave the party $[_{PP*}$ without $[_{IP/DP}$ t PRO $[_{AxP}$ t $[_{VP}$ meeting t]]]]]

This suggests that our analysis of non-P-stranding languages is in need of more sophistication, that in fact adjunct PPs such as PP* in (42) may be treated as C-P barriers in these languages as well.

A more serious problem is that we cannot account for the difference between (43) and (34), repeated below.

(43) a. which horse did you aggravate an injury $[_{PP}$ while $[_{IP/DP}$ t PRO $[_{AxP}$ t $[_{VP}$ riding $[_{PP*}$ on t]]]]]

b. which room did you fall asleep [$_{\text{PP*}}$ after [$_{\text{IP/DP}}$ t PRO
[$_{\text{AxP}}$ t [$_{\text{VP}}$ listening to a lecture [$_{\text{PP*}}$ in t]]]]]

(34) which table did you t leave letters [$_{\text{PP**}}$ in [$_{\text{DP}}$ t a
[$_{\text{NP}}$ book [$_{\text{PP*}}$ on t]]]]

Though the examples in (43) are borderline, they are not as ungrammatical as the one in (34). Nevertheless, in both two CLPs are skipped.

Another problem is that (44) and (45) should be grammatical, since there are good arguments for saying that the DP^s and PP^s are L-marked in these structures.

(44) what did he t criticize [$_{\text{DP\^{}}}$ t [$_{\text{NP}}$ introductions
[$_{\text{PP\^{}}}$ (t) to [$_{\text{DP\^{}}}$ t [$_{\text{NP}}$ books [$_{\text{PP\^{}}}$ (t) about t]]]]]

(45) what did he t question [$_{\text{DP\^{}}}$ t the accuracy [$_{\text{PP}}$ of
[$_{\text{DP\^{}}}$ t [$_{\text{NP}}$ books [$_{\text{PP\^{}}}$ (t) about t]]]]]

What may be happening is that PP (unlike CP) arguments of noun heads are not L-marked; the PP^s in (44) and (45) are unbridgeable arguments, in this view, and thus serve as LP-barriers.[6] Then (44) and (45) are ungrammatical because two LPs (PP^ and NP) are skipped. Further, (44) is "doubly bad" because this skipping of two LPs happens in two cycles.

The fact that (44) does not stand out as "doubly bad" compared to (45) may be due to the strength of the violations involved.

But this does not explain the "weaker violation" in (43). Let us then consider whether V can be said to "L-mark" even its "adjuncts." By this analysis, PP is always L-marked by V, but never L-marked by N, regardless of the PP's status as argument or adjunct. First, as we mentioned, (43) is not that good. Claiming that V adjuncts are simply L-marked does nothing to account for this. Second, we make the wrong predictions concerning (34), since now PP** can be bridged, and (34) should be on a par with (35).

(34) which table did you t leave letters [$_{\text{PP**}}$ in
[$_{\text{DP}}$ t a [$_{\text{NP}}$ book [$_{\text{PP*}}$ on t]]]]

(35) which signs does [$_{\text{IP}}$ the committee [$_{\text{AxP}}$ t [$_{\text{VP}}$ prescribe
[$_{\text{DP}}$ t the height [$_{\text{PP}}$ of [$_{\text{DP}}$ t the [$_{\text{NP}}$ lettering
[$_{\text{PP*}}$ on t]]]]]]]]

What if we said that Vs do not L-mark their adjuncts, but they do somehow treat them as arguments. But then (43) should be as ungrammatical as (44), since in (43) a PP and a VP (two LPs) would be skipped in one cycle.

I have been unable to find a solution to these problems. Particularly, it makes little sense why it is relatively grammatical to extract from two adjunct PPs if they are governed by Vs (43), but not when they are governed by two Ns (46a), or when one is governed by a V and the other is governed by N (46b).

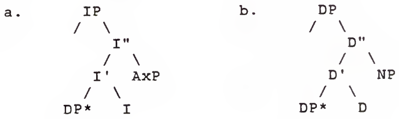
(46) a. which table did you read t a [book [$_{PP}$ on t a [$_{NP}$ shelf [$_{PP}$ above t]]]]

b. which table did you [put the letters [$_{PP}$ in t a [$_{NP}$ book [$_{PP}$ on t]]]]

5.3 INFL

We have attempted to develop a theory in which a "subject" can originate in the head of certain phrases, but so far we have glossed over the issue of what to do with INFL. An analysis such as (47) brings in new problems; though DP* could easily be theta-marked and Case-marked by AxP/NP, as we have supposed, DP* is not truly the head, but rather the complement of I/D. The element which has been assumed to be the true complement of I/D, i.e. AxP/NP, is now some sort of "adjunct." Such an indirect syntactic relation seems to be a challenge to the common assumption that Fs subcategorize for their LPs.[7]

(47)



Furthermore, the structure (47b) for DP predicts a quite elaborate specifier system which we have found some evidence against, in English at least.

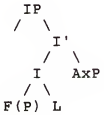
(48) a. *the city's the destruction

b. *the city's the destruction

This argument is rather shaky, however, since John's every book may give some evidence for a structure such as (48b). Suppose, for example, that John's may reside in the SPEC of DP, but it is at least coindexed with a dummy head position, marked "DP*" in (47b).

Consider another idea. Let us attempt to follow through with the claim that IP is an "FLP." We will resurrect a traditional notion in a new form; whereas traditional grammar as well as early "generative grammar" took it that the clause was "exocentric," we will consider whether the head of IP could be "exocentric." Because IP is the only "FLP," it would be unlike any other category in this respect.

(49)



DP, in this view, has no complex head; rather it seems that subjects of DP can be base-generated in either the head or the SPEC of DP, to accommodate *John's every book* and specific DPs with genitive subjects in general.

```
(50)     a.      DP                      b.        DP
                /  \                              /  \
               D    D'                        D(P)    D'
           these   /  \                     John's   /  \
                 D(P)  NP                            D    NP
                 our   gifts                     every   gift
```

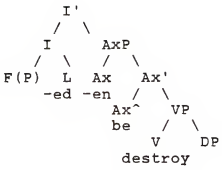
However, we will also claim that (50b) is "marked," and that in general the subject is in the "closer" position. Notice that we cannot now resort to an "adjacent sisterhood condition," since F(P) and AxP are not adjacent sisters in (50).

If the nature of the head of IP is something like (49), then it is fairly easy to see how L (INFL) and F(P) (the subject) could be "in agreement" and yet not affect each other during movement. Thus, as is well known, passive movement is not obstructed by the presence of a finite or nonfinite INFL.

We will attempt to illustrate how "V-raising" follows its own path by working out the details of what used to be "Affix-hopping" in English (see Chomsky 1955, 1957, etc.), now something more like "V/Aux-hopping."

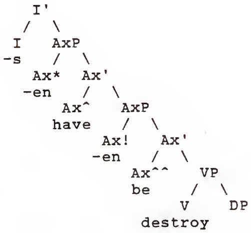
As a first approximation, we might attempt an analysis whereby "auxiliary verbs" such as *be* and *have* are heads of AxPs, with the *-ing* and *-en* that they impose on their complements in the SPECs of those complements.

(51)



The head Ax^ be would move into the head "L" to create was, but the head V destroy would move into the "SPEC" of AxP to give destroyed, in was destroyed. Such a system works out in a rather odd fashion as more auxiliaries are involved.

(52)



The Ax^ head have moves to the head position that -s occupies, the Ax^^ head be moves to the SPEC Ax*, and the head V destroy moves to the SPEC Ax!, giving has been destroyed. This seems rather arbitrary: Why should Ax^ move to I instead of Ax*, or Ax^^ move to Ax* instead of to Ax!, or even Ax^, etc.?

Basically groping in dim light (if not in the dark) we might try a system that works the other way around, in which have and be "auxiliaries" are really "SPECs" of AxPs, whereas the inflections that they are associated with are in the head positions.

```
(53)         I'
            / \
           I    AxP
          -s    / \
              Ax*  Ax'
            have   / \
                 Ax^   AxP
                -en    / \
                     Ax!   Ax'
                     be    / \
                         Ax^^ VP
                         -en  / \
                             V    DP
                           destroy
```

In this case, the movements remain local: head V moves to head Ax^^, SPEC Ax! moves to head A^, and SPEC Ax* moves to head I. Notice that we now have a rather consistent set of landing sites for "V-raising," categorially speaking.

(54) a. V to Ax (eaten, destroyed in (53))
b. V to I (ate, destroyed in he destroyed it)
c. Ax to I (has in (53), or has in has destroyed)
d. Ax to Ax (been in (53), or been in has been going)
e. I to C (did in did you go, cf. Rizzi)

The problem is that (54a), (-b) and, (-e) involve head-to-head movement, while (54c) and (54d) involve SPEC-to-head, and, again, we have a certain amount of arbitrariness. For example, in this analysis we would not want to allow be Ax! to move into the position of have Ax*, or -en Ax^^ to move into that of *-en* Ax^, but there is no discernible reason why this should be impossible. If, however, we could somehow view "V-raising" as strictly head-movement, the pattern in (54) might have some rationale. In this theory, it might be possible to claim that the only possible landing sites for "V-raising" are those "functional" heads which are [-N] in the standard feature system: Ax, I, C.

We can develop such a system by claiming that "auxiliaries" such as *be* and *have* subcategorize for "auxiliaries" such as *-en*, etc., while these Aux, as well as I in general, can subcategorize for AxP or VP. INFL and the endings associated with *be* and *have* may thus appear on the surface on a V or an AUX. Then *has been destroyed* would involve more than two AxPs.

```
(55)       I'
          / \
         I   AxP
        -s   / \
           Ax^  AxP
          have  / \
             Ax^^ AxP
            -en   / \
                Ax*  AxP
                be   / \
                  Ax**  VP
                  -en  / \
                      V   DP
                  destroy
```

Whatever the details of "V-raising," it need not affect "DP-movement" in most situations. If there is both clausal DP-movement and V-raising in the same clause, a conflict need not arise, because of the special nature that we have claimed for the head of IP: "F(P)" would be the "subject" position in the head of IP involved in DP-movement, and "L" would be the "I" position to which an Aux or V raises. The only situation in which DP-movement and V-raising should come into contact is in the head of CP. Thus, we do not expect to find V-raising into the head of COMP ("subject-Aux inversion") at the same time that there is ECM or passive movement into the head of COMP (Rizzi's generalization). This prediction holds for English, and I leave it for further research.

5.4 Another Syntactic Category Feature System

We now tentatively adopt the following feature system, building on the standard system proposed by Chomsky (1970, 1981b, 1986b), which makes use of [±N], "±substantive" and [±V], "±predicative." We add the features [±C], "assigned a theta-function," [±L], "lexical," and [±F], "functional." The terms "lexical" and "functional" are vague here; we will propose that they each refer to a cluster of properties. Lexical heads ([+L]) are L-markers, lexical phrases are "LP-barriers," Ls tend to have "referential content," etc. Functional phrases ([+F]) generally allow dummy positions in their heads and SPECs, behave as "functional barriers" rather than as lexical ones, and tend to have "theta-function content."

Table 1

	N	V	C	L	F	
N	+	-	-	(+)	-	(LP)
A	+	+	-	(+)	-	(LP)
V	-	+	-	(+)	-	(LP)
D	+	-	+	-	(+)	(CFP)
Deg	+	+	+	-	(+)	(CFP)
Aux	-	+	-	-	(+)	(FP)
P	-	-	+	(+)	-	(CLP)
I	-	-	-	+	+	(FLP)
C	-	-	+	-	(+)	(CFP)

In non-P-stranding languages, the "bridging condition" could be stated in terms of [+F], since PP cannot be bridged at all.

(57) A [+F] XP can be bridged if it is L-marked.

It may be assumed that the lexical aspect of I L-marks AxP, so that (57) holds generally. In English, however, the condition on bridging might be stated as (58).[8]

(58) A [+C] XP can be bridged if it is L-marked.

This says nothing about AxP, which is presumably in any case bridgeable, being a simple FP and unrestricted by (58). PP is now bridgeable, since it is included by (58). The fact that I seems to L-mark AxP is irrelevant, which may be one reason why (58) is "marked." In addition, this parametric choice may be marked because PP is the only C-P which is not [+F, -L].

DP-movement within DP may be restricted to landing site positions which are [+F, +N, -V], while clausal DP-movement would involve [+F, -N] (i.e. only C and I (and maybe AxP), since PP is [-F]). The paths of this "second type" of DP-movement and of "V-raising" should conflict in C and AxP, but not in IP. Landing positions for "V-raising" include C, I, and Aux; as we mentioned, these appear to be the class [+F, -N]. X-to-SPEC movement (i.e. "wh-movement") could use the SPEC of any phrase that is [+F].

The [+N] elements could be singled out as those which require (abstract) Case (either by assignment or concord). The class [+N, +L] appears to be involved as the kind of predicate which licenses tough-constructions.

(59) a. this book is easy to read
b. the book is a wonder to behold

The [+V, +L] elements appear to trigger DP movement, while "L-marking" for wh-movement seems to be possible for any [+L] element, categorially speaking.

Of course, any syntactic category feature system with five features must answer the question why there are not thirty-two discernible syntactic categories, and why only those specifications exhibited in Table 1 are singled out.

In the spirit of modularity, an answer to this question can be attempted by investigating whether some core linguistic principles of some kind see to it that a number of specifications go unrealized. Here, I will argue that the special properties of IP, PP, and AxP disallow other manifestations.

First, it can be seen from the features in parentheses in Table 1 that a given element must be positively specified for at least one of the features [L] or [F]. This is formalized loosely in (60).

(60) a. If [-L], then [+F]
b. If [-F], then [+L]

Second, we have the peculiar nature of I. This can be represented as in (61).

(61) a. If [+L, +F], then [-N, -V, -C]
b. If [-N, -V, -C], then [+L, +F]

Third, the status of Ax as the only simple FP might be expressed as (62).

(62) a. If [+V, -N, (±F)], then [-C]
b. otherwise, if [+F], then [+C]

The properties of PP seem related to the concepts expressed in (63).

(63) If [+C, -F], then [-N, V]

The statements in (59)-(63) might be seen as categorial principles for natural language, represented in something like "redundancy rules" in terms that are relevant for the syntactic category feature system. Together, they do apparently serve to rule out the nonmanifested specifications.9

In fact, the system represented in Table 1 may be a "marked" one used for English. The feature [+C] is largely secondary, not needed to pick out AxP, PP, or IP, since they are already otherwise distinguished; Ax is the only [+V, -N, +F] element, P is the only [-N, -V] which is [+L, -F], and of course I is the only one which is [+L, +F]. Yet, Ax, P, and I are the only categories whose [F] and [C] features do not agree.

It might be asked why both the [L] and the [F] features are needed, since if it were not for I, any category that is [+F] would be [-L], and vice versa. I would like to claim that this stems from the peculiar status of I; it can have "inherent content" and yet display syntactic peculiarities, it can exhibit both nuclear and "exocentric" structure, it L-marks its complement and yet IP can be bridged. From an impressionistic point of view, I is the only category that simply defies the question: "Is it lexical or functional?". In some sense, then, given a three-feature system, this question is left unresolved, two systems are always possible, from two perspectives. Not only does I "refuse" to fit into the mold of "either lexical or functional," even if it did, it would have "no room" in the feature system. If we say "lexical, not functional," I cannot be distinguished from P, and if we say "functional, not lexical," it cannot be distinguished from C.

Table 2

a.	N	V	L
N	+	-	+
A	+	+	+
V	-	+	+
D	+	-	-
Deg	+	+	-
Aux	-	+	-
P	-	-	+
C	-	-	-
I	-	-	-

b.	N	V	L
N	+	-	+
A	+	+	+
V	-	+	+
D	+	-	-
Deg	+	+	-
Aux	-	+	-
P	-	-	+
C	-	-	-
I	-	-	+

A system using both [L] and [F] would at least "resolve" the question, answering "It's both (and it's the only one that is)." This not only answers the question, but creates a distinguishing feature specification for I, which in (Table 2) is a "PP and a CP at the same time," whatever that means.

5.5 L-marking Revisited

We began by claiming that "L-marking" in its traditional sense was not enough to license bridging, i.e. that it was not enough for a lexical category to theta-mark a phrase to make that phrase bridgeable. Rather, some "modality feature" that certain verbs assign to their complements opens a dummy position which makes bridging possible. This was meant to explain why say and imagine appear to allow extraction more freely than murmur and destroy, even though all seem to be "transitive verbs."

The number of non-bridging verbs appears to be small initially, at least within the group of verbs which take complements with "propositional content." While it could be argued, in fact, that there are "many" verbs like destroy, that is, verbs which take complements without propositional content which do not "L-mark," concern over "frequency" misses the point. What is "special" about L-marking is that, when it happens, it licenses bridging; it lends its complement some certain property. In this sense, bridging is barred in general, somewhat along the lines of Koster's work, unless it is specifically licensed. This is partially due to the theory of free projection; unless a dummy SPEC is MADE available, no empty position is predicted. Contrast this with the standard theory, in which X-max equals X". In any situation where there is no overt SPEC, the position either must be empty and available, or some extra provision is needed to see that it is not there.

We have argued that some verbs L-mark only certain kinds of complements, and that nouns L-mark complement clauses but not "complement PPs." At the same time, it has been assumed that I and P generally L-mark their complements. Why should the L-marking capabilities of nouns, verbs, and adjectives appear to be variable but those of I and P across-the-board? Perhaps the reason for this is that only elements which are [+N] or [+V] (or both) have a "full range of semantic content" (they are in some sense the "open classes"), while I and P are [-N, -V], and are not free to vary in this way. In fact, while verbs seem to be able to vary as to whether they L-mark their direct objects, they always appear to L-mark "indirect objects," even when they are not "bridge verbs."

(64) who did John murmur a greeting to

(65) what did you destroy that book for

This suggests that the notion of "L-marking" is generally on the right track, that it occurs when a lexical category theta-marks a phrase, but under the right conditions a lexical category may not L-mark a "direct object." For example, N may L-mark complement clauses (CPs), but not complement PPs, because N can only L-mark (C)FPs. Then perhaps L-marking varies according to the type of head involved, as well as the type of complement, but such variation is possible only between a [+N] or [+V] head and a "direct object" complement. Otherwise, L-marking seems to occur generally, as with Vs and "oblique" complements, with P and its object, and between I and AxP.

The L heads which do not L-mark their direct objects were claimed to not license bridging because they do not license a dummy landing site position. It may appear to be inconsistent to suggest that L-marking holds generally and yet that bridging is "exceptional." First, it seems plausible to suppose that "L-marking" in some broader sense occurs in languages even without ("overt") wh-movement, related to the use of certain "modality" particles or "subjunctive mood," etc. L-marking in this broader sense is not sufficient to license bridging; rather, we propose that a parameter allows L-marking to license a dummy position, which in turn makes bridging possible. Then bridging is exceptional, in that all phrases are "islands" to bridging unless such dummy positions are available. Apart from this, of course, a phrase may or may not be easily skippable.

Earlier we suggested that ECM constructions were "licensed" by particular verbs in some way related to the notion of "L-marking." Note, however, that the verbs which trigger ECM do not "license bridging" of the phrase that is so marked. Thus, CP in (66) in L-marked, but it is not bridged.

(66) we considered $[_{CP}$ e $[_{IP}$ he/him to be intelligent]]

Rather, bridging of a CP like this is found when passive, as well as the ECM construction, is also involved.

(67) he is $[_{VP}$ considered $[_{CP}$ t $[_{IP}$ t to be intelligent]

It seems that passive (whether it is by "Case absorption" or something else) gives the impetus for the bridging of CP, but it does not necessarily license a dummy head position in the way that ECM verbs do. Thus, in our analysis of the DP-movement in (68), no bridging is involved.[10]

(68) John -s $[_{AxP}$ be $[_{AxP}$ -en $[_{VP}$ kill t]]]

It seems that bridging of CP is involved in passive (in (69)), bridging of both IP and CP) only when a dummy head has been licensed by an ECM verb.

(69) John is [$_{AxP}$ [$_{VP}$ assumed [$_{CP}$ t [$_{IP}$ t to [$_{AxP}$ have [$_{AxP}$ been [$_{VP}$ killed t]]]]]]]

"ECM L-marking" appears to license the dummy head in CP, making it possible to bridge CP, while passive might create the proper conditions for bridging AxP.

Raising verbs also create the conditions for "DP-movement." But these verbs are exceptional in that the proper conditions for movement arise from lexical properties, rather than from a "grammaticalized" "voice." What exactly does this mean? Consider the idea that the passive "auxiliary," which we will treat as an Ax, has some feature which blocks theta-role assignment on the subject. A raising verb will do about the same thing, but here we will say that the verb fails to "project" any theta-role assigning properties to AxP. In both passive and raising, as is generally assumed, the "subject" position is a non-theta-position and therefore a possible landing site.

Another way in which raising verbs are "exceptional" is perhaps more puzzling. These verbs, like those which take ECM complements, apparently must also license a dummy head in CP complements.

(70) $[_{IP}$ e $[_{I'}$ e $[_{AxP}$ $[_{VP}$ seems $[_{CP}$ e $[_{IP}$ he/him to be intelligent]]]]]]

It seems, however, that a raising verb may not license a dummy head in other types of complements, since such a position is not necessary in (70), though it is in (71).

(71) a. John $[_{AxP}$ $[_{VP}$ seems $[_{DegP}$ t $[_{AP}$ happy]]]]

b. John $[_{AxP}$ $[_{VP}$ seems $[_{DP}$ t $[_{NP}$ a fool]]]]

By the same token, ECM verbs do not seem to have to license dummy heads in similar complements.

(72) a. John $[_{AxP}$ $[_{VP}$ considered $[_{DegP}$ her $[_{AP}$ happy]]]]

b. John $[_{AxP}$ $[_{VP}$ considered $[_{DegP}$ her $[_{AP}$ a fool]]]]

This suggests that raising and ECM are both "marked" when they involve clausal complements, but not otherwise. This means that we should find in most languages the "simple passive," the "simple ECM construction," and the "simple raising construction," but not necessarily long-distance movement involving the bridging of clauses. One interesting piece of typological evidence for this is that the "small clause" ECM was permissible in a number of languages in which "truly clausal" ECM was not (see Miller and Leffel, 1986).

Why should it be that "passive verbs" do not seem to license dummy heads in the complement of V when raising verbs apparently can? If passive is conveyed by Ax, Ax does not govern any complement of V, since VP is an LP blocking government. Passive thus can only open up an AxP for bridging: raising verbs can L-mark their complements.

(73) John [$_{AxP}$ be [$_{VP}$ believed [$_{CP}$ t [$_{IP}$ t to have been killed t]]]]

The fact that ECM and raising verbs can be semantically related also predicts that they might be treated together as a class. Both raising and ECM verbs have "nonfactive" complements (see Kiparsky & Kiparsky 1970), and it might be said that they put these complements in a "hypothetical mode." With ECM verbs (74b) there is human participation in the hypothesizing, an acting on reality. Raising verbs (74a) involve no such participation. The origin or nature of the influence on reality either is unknown, or cannot be attributed a role as a "participant."

(74) a. seem
appear
look
feel
happen
chance
turn out
prove

b. believe
think
consider
know
suppose
assume
take
realize
understand
view
expect
intend
mean
want
describe
picture
imagine

It must be asked, however, what it means when a language, e.g. French, lacks ECM constructions, even while it allows unbounded passives and raisings. Does a language which lacks ECM simply lack the special property attributed to certain lexical items such as those in (74b)? That is, do these verbs simply fail to license an empty head in a CP complement?

Various attempts have been made to account for variation involving ECM. Kayne, for example, proposes that ECM is linked to P-stranding, i.e. that the ability in English of P to properly govern allows it to be stranded and to assign Case to the subject of a clausal complement. There are a number of languages, however, which possess ECM constructions, but which do not allow P-stranding.[11]

Bouchard (1983) proposes a markedness principle, that Case-marking and theta-marking in the unmarked case coincide. The question remains why and how it is possible for them not to coincide, when they do not, without a "systems breakdown." That is, if ECM is an instance of nonobservance of some generalization, in what ways are such possible "violations" constrained?

Our attempt to account for ECM will address the question of Case-marked clauses. We will try to see if it makes any sense to see ECM as an "exceptional" instance of "assigning Case to a clause." Apart from this, we may claim that languages which lack ECM constructions do not allow licensing of empty positions in CP complements unless a dummy subject is also licensed; perhaps the licensing of an empty position in an XP in these languages MUST license bridging (note ECM does not license bridging in the nonclausal cases).

5.6 Case-marked Clauses and Exceptional Case-marking

A currently debated question is whether clauses are Case-marked. Chomsky (1986a) argues that clauses in English do not require Case since they are not forced to undergo DP-movement in passive constructions.

(75) a. it is believed that Mary is intelligent

b. *it was believed John

Nevertheless, there are instances in some languages in which it could be argued that a clausal structure is Case-marked (the following data are compiled in Leffel and Miller, 1986; for the Japanese examples, see Kuno, 1973, Ch.19).[12]

(76) a. John wa [Mary ga piano o hiku no o] kiita
TOPIC NOM ACC play ? ACC heard
"John heard Mary play the piano"

b. John wa [Mary ga piano o hiku koto o] kiita
"John heard that Mary plays/played the piano"

c. eigu o mi ni itta
movie ACC see DAT went
"(X) went to see a movie"

In our theory, it could be argued that *no* and *koto* are markers of "modality" in INFL, while *o*, as well as *ni* in (76c), is a Case-marker in COMP. From the perspective of how Case-marking works in general, the Case-marked phrase in Japanese works like an adpositional phrase (PP); the head IS a Case marking. Case is manifested differently, as a "morphological marker," on DP, NP, AP, etc; here the head HAS a Case marking, rather than being one. From this point of view, Case-marking on CP in Gothic is more like Case-marking on DP, NP, etc.

(77) jah froþun þammei siun gasaȟ

and they-realized that-DAT vision saw
"and they realized that he had seen a vision"

In fact, our theory predicts that Gothic and Japanese should be rather ordinary. CP is a natural candidate for Case-marking, since it is governed and assigned a theta-role by a Case-assigning verb. Since the structure of "S-bar" observes X-bar theory, Case should be markable on its head. I think it is fair to say, however, that Case-marking on clauses does not take place in as clearcut a fashion as the principles of X-bar theory, percolation, and visibility predict. Even in the relatively well-studied languages with rich overt Case-marking systems, there are few clear instances of Case-marked clauses. A number of languages are able to resort to some kind of "gerundive construction" (78), or to an ECM construction (79), but lack the options of either Japanese or Gothic.

(78) a. Sanskrit

trā́dhvaḿ kartā́d avapádaḥ
protect (impv) from-pit from-falling
"protect (us) from falling down into the pit"

b. Latin

aggerundā from-bringing
aquā from-water
sunt they-are
dēfessī tired
"they are tired from bringing water"

c. Turkish (Aissen, 1979)

(Ben) Hasan-ɨn ¢ocuǥ-u tekmele-diǧ-i-ni
(I) GEN child-ACC kick-fact-poss-ACC

san-ɨyor-um
believe-pres-1st
"I believe that Hasan kicked the child"

(79) a. Latin

ēi ego ā mē referendam grātiam nōn putem?
to-him I by me to-be-returned favor not I-think
"am I not to think the favor to be returned to me?"

facile est mihi hoc facere
easy is for me this to-do
"it is easy for me to do this"

b. Greek

perimenun to Jani na fiøi
they-expect the-ACC John-ACC that he-leaves
"they are expecting John to leave"

c. Japanese (Postal, 1974, citing Kuno, 1972b)

John wa Mary o baka da to omotte ita
fool is thinking was
"John thought Mary to be a fool"

d. Turkish (Aissen, 1979)

Hasan ben-i ¢ocuǥ-u øp-tʉ san-ɨyor
I-ACC child-ACC kiss-past believe-pres
"Hasan believes me to have kissed the child"

One advantage of the traditional analysis of the clause as S' --> COMP S (Bresnan, 1970; Chomsky, 1973; etc.) is that it helps to account for why it should be difficult to assign Case to a clause, from a structural point of view (see Leffel and Miller, 1986). If we assume that Case assignment on S-bar percolates to its head S, there is no unique "head of S" on which to mark Case; it may then percolate to the "heads" of S: NP, VP, or INFL.

```
(80)                S'
                   / \
                COMP   S
                     / | \
                   NP INFL VP
```

An exocentric analysis of S accounts for ECM and apparent Case-markings on INFL. But there are a number of problems with this view. First, the instance of Case marking which might be said to appear on INFL by one analysis could be claimed to be on V in another, but there is little, if any, evidence, that both V and I receive Case-marking. If NP, INFL, and VP are all "heads of S," they should all be able to receive Case-marking equally. Also, it is not possible to distinguish the Case-marking on S-bar from that on S, since in either situation the only choice is to percolate to at least one of the three heads of S. When Case shows up on the complementizer, as in Japanese (apparently) and Gothic, additional principles for Case-marking of "specifiers" must be provided.

It seems to me that there is some merit to the leading idea behind such an analysis, though the analysis itself may be wrong. As has been argued, the concept of "visibility"13 supports the idea that clausal complements should be assigned Case. Yet there appears to be something about the nature of the clause itself which makes such Case assignment difficult, perhaps even impossible, except under special circumstances. If we accept the view that S' = CP and S = IP, then whatever is peculiar about clausal Case assignment, it does not seem to be due to the basic X-bar structure of CP, which in fact should facilitate Case assignment. The general avenue we will take in our inquiry involves the categorial properties of CP as opposed to other categories which appear to carry Case more easily.

Let us make a distinction between a phrase which is Case-marked in that its head HAS a Case-marking, and one which is Case-marked in that its head IS a Case-marking. Generally, NP, AP, DP (and CP in Gothic) have Case-marking on their heads, but IP and PP could be said to be Case-marked in the second fashion, by having Case markings as heads. We might go further and claim that IP and PP must be Case marked in this way. This seems quite plausible for PP; to my knowledge there are no Ps with Case markings on them. As a working hypothesis, we can analyze any Case-marking in I as a head, rather than as a marking on a head. Suppose we are on the right track: What is it about P and I that makes them different? The two categories are special in our feature system, in fact, because they are the only two which share the same specifications for the three features [N], [V] and [L] (see Table 3).

Table 3

		N	V	L
N	has Case	+	−	+
A	has Case	+	+	+
V	*	−	+	+
P	"is" Case	−	−	+
I	"is" Case	−	−	+
C	(has Case?)	−	−	−
D	has Case	+	−	−
Deg	*	+	+	−
Aux	*	−	+	−

We assume here that VP/V and AxP/Aux do not receive Case, unlike the theory presented in Fabb (1984). Further, to my knowlege there is no evidence to suggest that degree words are assigned Case. We also tentatively propose that any [+L, -F] category can be a Case assigner. This includes N, A, V, and P, but not I, C, D, Deg, or Aux.(*although we have claimed that AxP and NP can both be "mediating" Case assigners of some kind.) The proposal entails that the "for complementizer" in English, as well as o and ni in Japanese, are prepositions.

Let us also view "Case assignment" at two levels of abstraction. First, any CFP which is assigned a theta-role is assigned Case "syntactically." This Case "percolates" to the head of the FP, and appears to "spread" to its complement LP and then percolate to its L head in turn. At another level of abstraction, however, the categorial status of the relevant FP and LP determines whether, and if so, how, Case is markable on the head of some FP or LP.

It is commonly thought that the head, and thus the phrase, which is Case assignable par excellence is N/NP, which is specified with respect to the features [N], [V], and [L] as in (81).

(81) [+N, -V, +L]

These three feature specifications may be essential for determining which categories are Case-markable. As a first approximation, we might formulate (60), so that the categories which are Case-markable are those in (a) in Table 4, and those which cannot carry Case are in (b).[14]

(82) XP receives Case marking if its categorial feature specification includes:

[A, B], where A & B = [+N], [-V], or [+L], and A ≠ B.

Table 4

		N	V	L
a.	N	+	-	+
	A	+	+	+
	P	-	-	+
	I	-	-	+
	D	+	-	-
b.	C	-	-	-
	Deg	+	+	-
	V	-	+	+
	Aux	-	+	-

Though assigned Case "syntactically," DegP and CP and their heads are not Case-markable. Instead, Case may be manifested on the LP complement (AP, IP, respectively) of the FP in question. ECM might be a way in which DP-movement incidentally provides a means by which CP and DegP can be "Case-marked." In this sense, the "visibility" of Case-assigned elements may have to be read off of PF.

The generalization (82) does not appear to be a plausible universal principle, not only because of its complexity, but also because it does not account for a number of phenomena. Why can complementizers ever be Case-marked at all, as they apparently are in Gothic? The prediction of (82) is not just that such marking will be rare, but that it should be just as unlikely as Case-marking on Deg or V. Also, we have ignored "adverbs," which we assume to be instantiations of the category Deg when it "modifies" a non-noun, and which apparently goes totally un-Case-marked.

Let us distinguish between Case "assignment" and Case "agreement" or "concord." Suppose that Case "assignment" is markable only on phrases which are [+L, -V]: NP, PP, and IP. DP and AP, on the other hand, have Case "discharged" on them by means of concord, which only takes place under "theta-identification" by an N/NP.

If the "adjective phrase" is really a DegP, however, it seems that DegP must be discharged a Case through concord as well, since it is DegP which receives the theta-identification. We are then left with the question why Deg is not Case-markable. Like A and D, Deg is [+N]; again, it seems that we might profit by saying that DegP and DP are assigned Case under concord "syntactically," but then (82) does not permit Deg to be Case-marked. (Notice that a "genitive" in a DP may receive Case concord marking if it has no ("syntactic") Case assigned, as with Latin possessive pronouns.)

In fact, Case concord, like Case assignment, might be obtained "syntactically" by any CFP (perhaps not PP, the CLP, unlike Case assignment). This would mean that DP (e.g. appositional noun phrases), CP (i.e. relative clauses), DegP (when they are not "complements") can all receive such concord. Again, DegP and CP appear to resist marking for Case concord.

Gothic might have selected a parameter by which Case assignment, and perhaps Case concord as well, was markable on any [-V] element. The simplicity of the parameter might be what allows the "violation" of (82), under "marked" circumstances. Otherwise, in general, CP is not Case-markable.

Other, more "functional" reasons for CP's resistance to Case-marking may rest on the notion of "visibility." Recall our claim that certain complements are L-marked in general, while others, specifically, "direct objects," may or may not be L-marked. The reason for this is that a lexical head may vary as to HOW it L-marks a direct object. When such variation is given a marking, we see "modality markers" such as koto and no in Japanese. Then the lack of an overt modality marker in itself "means something;" thus we have posited that ECM verbs license a dummy head in their CP complements, and thus "dummy head" is an "L-marking" or "modality marking."

Such marking should serve to make a complement "visible," rendering Case-marking redundant (Japanese koto o and no o would be redundant in this sense).

We will attempt to distinguish between the "assignment" of modality and the "marking" of modality, as we have done with Case. Further, we will claim that "modality" can be "assigned" to any [+F] element (DP, DegP, CP, and AxP). Whether it can be MARKED on a particular FP depends on whether that F is also [-N].

Thus, when DPs are theta-governed by certain "bridge verbs," DPs are assigned "modality," we claim, which opens them for bridging. But DPs do not generally carry modality markings assigned from outside DP (though they may carry certain "inherent" modality markings if "specificity," etc. can be included in this broad notion of "modality;" still in English we rely on "content words" such as alleged and supposed rather than markings to indicate "modality" in the more usual sense.)

If something along these lines is correct, IP, CP, DegP, DP, and AxP can all be "assigned" modality, but whether the modality is "marked" is determined by additional factors. Then "modality marking by a lexical head" may be "L-marking." That is the [+F] phrases are the ones which are bridgeable, because it is these phrases that receive modality markings from L governors. Modality marking in this broad sense licenses the dummy SPEC through which wh-extraction can bridge. The more particular "head-L-marking" we have attributed to raising and ECM verbs assigns an "empty" modality marking as a head of DegP, CP, or DP. Such modality assignment is apparently restricted to CFPs.

5.7 Summary

In this chapter we have argued that IP acts as an LP-barrier for bounding, and that the SPEC of IP is a possible landing site for *wh*-movement. In this version of the tehory, we are able to account for the effect of tensedness in *wh*-extraction from relative clauses, adverbial clauses, and *wh*-island extractions, as well as for the restrictions on movement from subject phrases.

Further, though there remain problems with the notion that LPs are also barriers to government, it does seem that IP acts as a barrier for Case-assignment of its subject. It might be asked, since we have analyzed subjects of IP as "heads" of some sort, how IP could block government and Case assignment of its subject, even if it were a barrier, since Case could be assigned to IP and then percolate to its head. If there is a requirement at S-structure that "specific" phrases have filled SPEC, and if Case is assigned (or "checked") at S-structure, IP could block government of and Case assignment on its SPEC.

The addition of the SPEC of IP to the possible landing sites supports the hypothesis that *wh*-movement as "SPEC-movement." We include *tough*-constructions as instances of "SPEC-movement" as well. Here the SPEC of IP is used as a final landing site, coindexed with the "true subject position." DP-movement, on the other hand, is "head-movement," which may be more restricted in types of landing sites--thus we have hypothesized that DP-movement cannot make use of a dummy head in any [+V] category. "V-raising," another type of head movement, may be restricted to [-N] landing sites. Also, clausal DP-movement and DP-movement within DP may differ with respect to the types of landing sites which can be employed. The idea that head-movement is restricted as to category type makes some sort of sense if we assume that X-bar theory, in some form, holds at S-structure, so that categorial features at the least cannot be in conflict. Apparently, SPEC-movement is not restricted in this way, especially if movement to the SPEC of IP is allowed--assuming IP is functional and well as lexical and thus can have empty SPECs and be bridged.

If the SPEC of IP is available, we have to explain why nonfinite IPs in subject position are unbridgeable. Since IP is never L-marked and can apparently be bridged in complement and adjunct CPs, we have proposed that IPs must be L-governed to be bridged. This is another way of saying that an empty head in IP must be licensed by some head with lexical properties (even if this is done uniformly).

Another category with complex properties, PP, is explored in this chapter. First we note that it seems easier, at least in English, to skip adjunct CFPs than argument CFPs. PPs are claimed to be "bare," that is to not be associated with some F the way AP, NP, and VP are, because if they were FPs or CFPs they should be more easily bridgeable in a number of languages, and because it is difficult to determine a distinctive F with which P, and P alone, is associated with.

Complicated movement out of picture of structures indicates that it is permissible to skip two argument PPs as long as they are not skipped at once, but since they are not L-marked, they must be skipped. Complicated movement out of adjunct PP seems to show that it is not possible to skip two adjunct PPs even if they are not skipped in the same movement. We hypothesize that argument PPs act as LP-barriers, while adjunct PPs behave as "C-P barriers."

It is also suggested that non-P-stranding languages may simply treat PP as an LP-barrier in general. Still, it seems that the relation between P-stranding and being able to extract out of PP may not be quite as close as we have implied, since a number of languages (e.g. French and Spanish) allow constructions such as who did you leave without meeting, but do not tolerate P-stranding.

We have also attempted to explore some of the peculiarities of the head of IP. If it is true that the head of IP is exocentric, the relation between AxP and the subject is no longer one of adjacent sisterhood, as we argued earlier. It seems quite complicated to project Case and theta-role assigning properties from V to AxP, which might then assign features to I', which might then percolate such features to I, which in turn would assign them to the subject. On the other hand, it could be that this complicated maze of relations favors the existence of dummy heads in IP more than in other categories.

From the structural point of view, however, the exocentric view of the head of IP seems to account for a certain degree of independence of DP-movement and V-raising. Thus, the theory predicts that DP-movement and V-raising can apply in the same structure, which is true. As Rizzi (1984) argues, the head of CP would be a typical head, filled with only one category at a time. Thus, we would not expect to find V-raising to C ("verb-second phenomena") and an overt complementizer in the same structure. Our analysis of ECM also predicts that V-raising to C and raising of subject to the head of CP cannot occur in the same structure.

We have seen V-raising as a series of local movements, in which V can move to Aux or I, Aux can move to Aux or I, and I can move to C. We have not succeeded in capturing the intricacies of how this series of movements works together. The main purpose of this discussion is to show that it seems feasible to view DP-movement and V-raising as head-movement, but that the two types of head-movement follow somewhat different paths.

A feature system is sketched which interacts with a system of principles of some kind which we have represented as "redundancy rules." A number of aspects of the feature system are clearly troublesome, but it also has some interesting properties. For example, it does not seem unreasonable that every category has to be specified positively for "lexical" or "functional" properties. If the lexical/functional distinction were expressed with one feature, however, this principle would be unnecessary as long as we assumed as system of binary features.

The breaking up of the lexical/functional distinction into two features rests on our theory of IP, and since we have basically derived our feature system from the properties by which we distinguish the two classes, we have theory-internal support for the notion that IP has both lexical and functional properties. As a "lexical category," INFL may very well L-mark AxP, licensing its dummy head. We have argued extensively that IP seems to behave as a LP-barrier. Further, it might be claimed that IP has "referential content" in some broad sense roughly corresponding to "proposition," and that IP must always be the complement of C. The presence of CP thus provides structural evidence that IP patterns with other LPs.

At the same time, we have claimed that IP exhibits functional properties as well. Like FPs in general, IP seems to have a relevant SPEC slot, not easily definable for lexical categories such as VP, NP, etc. Like a CFP, in fact, IP has a "subject." IPs allow dummy positions at D-structure and can be bridged. Unlike any other category, IP requires this subject, under the assumptions of "GB-theory;" here we might invoke a truly structural "Extended Projection

Principle" which requires a SPEC for all IPs, perhaps as the major way that I/IP signals its functional aspect.

Whether a given head L-marks depends on a number of factors. If the L-head is [+N] and/or [+V], it can vary as to whether it L-marks its direct object. Otherwise, L-heads uniformly L-mark their complements in our system.

The various types of L-marking license an empty categories at D-structure; whether bridging then occurs depends on the presence of other landing sites. It remains to be be seen whether some languages allow simple movement without bridging.

Finally, we make a distinction between the assignment of Case to CFPs and the marking of Case on particular XPs, and we hypothesize that Case can be marked only on categories with certain characteristic features.

In general, it seems that we have dealt with some of the more complicated issues presented by our theory, primarily concerning the nature of IP and PP, though a number of problems remain. In Chapter Six, we will attempt an overview and refinement of the theory developed here, and outline a number of its interesting characteristics as well as some of the residual problems.

5.8 Notes

[1] Or, maybe SPEC-to-head movement is local, as we have claimed head-to-SPEC movement is. See May (1979a) for an early attempt to derive the COMP-to-COMP condition.

[2] To my knowledge, Chomsky has not spelled out explicit features for CP or IP, but when he calls PP "nonlexical," this is as opposed to NP, VP, and AP, which are either [+N] or [+V] (see Chomsky 1981b, 1987). IP and CP are called "nonlexical" in Chomsky (1986b), so I am assuming that he intends them to also be neither [+N] nor [+V], i.e. they are [-N, -V], given the simple binary system of Chomsky (1970), etc.

[3] On the other hand, we could claim that the head of AxP is available here, but that the C head cannot be empty; then IP* and VP would be skipped in the same movement in (15). It is unclear, however, why seem should be able to license an empty head C for infinitival clauses but not finite clauses. Notice that in any case it seems that it is the availability of the head of IP that is crucial, since it is not sufficient to be able to bridge CP alone.

[4] Here, there seem to be two choices--either to say that movement must involve categories which are not in feature conflict, or that features must "match" but [-X] in a binary system is to be read as "unspecified for positive." Incidentally, I have considered Reuland's (1986) ternary system, but do not see how generalizations can be made easily using such a system.

[5] Perhaps this can be derived from our claim (3.7) that IP is an "XP," i.e. somehow a "nondistinctive" category which has properties of all categories (which, in turn, makes it distinctive).

[6] This is similar to Kayne's claim that Ns do not "properly govern." Here, we claim Ns do not L-mark their various types of complements uniformly, e.g. they seem to L-mark clauses but not PPs. Perhaps this has something to do with the nature of PPs as well as the nature of Ns.

[7] Bouchard (p.c.) has made the following suggestion: Perhaps a DP subject must appear in the head of IP because 1) I, as a special "morphological" type of head, cannot head a phrase alone; I is not truly syntactic, and 2) Rothstein (1983)'s principle of "saturation" could explain why that "truly syntactic head" which IP must have is a subject. Beyond this, it is possible that IP must always have a SPEC--which would be a truly structural "Extended Projection Principle;" a dummy SPEC cannot be licensed in IP through "L-marking."

[8] As Bouchard has pointed out to me (p.c.), the question must be asked how much languages are allowed to differ in such statements. Does English "acquire" (or make relevant) a new feature (C), i.e. carry the "logic" of the system further than is "unmarked"?

[9] The redundancy rules' effect on possible categories is demonstrated in Appendix B.

[10] If this account of the structure of "the predicate phrase" and the path of DP-movement is correct, VP and the two AxPs must be skipped. Here is another problem with our current theory of LP-barriers to government, since VP does not M-command John in (68).

[11] Cf. the languages in (79), for example. There is some debate about what is going on in these languages, whether this is "real ECM," etc., but at least the question is worth entertaining, whereas there is little debate about whether most languages tolerate P-stranding.

[12] Kuno (1973) describes no as a marker on things perceived, or seen as abstract, and koto, as a "factive," more concrete ("thingy") marker; these are "modality markers" in our sense.

[13] We refer to "visibility" throughout this work in a loose sense, not claiming any condition of biuniqueness between theta-roles and Cases realized. See Borer (1984), Bouchard (1984).

[14] The incompatibility of certain categories may be a PF phenomenon; it determines which categories can be MARKED with Case, but is separate from the idea of which phrases are assigned Case "syntactically," i.e. at S-structure.

CHAPTER 6
CONCLUSION

6.1 Summary

We begin this chapter with an outline summary of the principles developed to this point. The principles will then be discussed and refined, as we note some of the advantages and disadvantages of the theory.

(1) Free X-bar Theory

- A. $X^{n} \text{-->} X^{n-1}\ Y$
- B. Bouchard's (1979, 1982) theory of free projection.
- C. Resulting properties:
  - I. Trees are endocentric, progressively numbered, and binary branching.
  - II. The level of X^{max} is not stipulated.
  - III. A head can project infinitely, accommodating whatever dependents it has
  - IV. X-bar theory applies to all levels of representation. [No adjunction.]
  - V. X-bar theory applies ("is generalized") to all categories; see (3).
  - VI. The bar-level of the head may not have to be stipulated as "zero-level." Heads may only have to be zero-level if "filled;" when empty, heads (and SPECs) may be X-n-bar.
  - V. Empty categories at D-structure) are not provided by Free X-bar theory (the theory of free projection); they must be "licensed"

by a governor outside the phrase, and the phrase can have no lexicalized SPEC/head "already."

(2) Theory of Grammatical Functions

A. "SPEC" is the nonhead category immediately dominated by X-max. (SPEC may only be relevant to functional phrases.

B. "Subject" is the head of FP, when licensed as an X-max (perhaps by assignment of grammatical function).

C. "Direct object" is the adjacent sister to a lexical head.

D. DP: Postnominal genitives as in picture OF WHO are sisters to D.

(3) Lexical/functional Distinction

A. Lexical categories [+L]:

I. Lexical heads have "referential," or "descriptive, content.

II. The Projection Principle strictly determines the possible constituents of LPs, as arguments or modifiers of lexical heads; LPs have no empty categories, and cannot be bridged.

III. Every LP (NP, VP, AP, IP) is the complement of some F.

IV. Lexical heads "L-mark" (variable with L heads that are [+X], where [X]= [N] and/or [V], and their direct objects).

V. Lexical phrases are LP-barriers.

B. Functional categories [+F]:

I. FPs are subject only to subcategorization; only the complement of F is strictly determined. [Only] heads and SPECs of FPs can have empty categories at D-structure.

II. FPs generally have "syntactic content"-- receive "theta-functions" (theta-roles, "modifying roles"), or "predicate functions," and can be "syntactically" assigned person, number, Case.

III. "CFPs" (FPs assigned "theta-functions") are CFP-barriers.

IV. "Specific" FPs have a filled SPEC.
a. Lexicalized subjects appear in the SPEC of a CFP (coindexed with the [0] head in D-structure). PRO subjects can appear in the head.

(4) Theta-theory

A. "Extended Theta-Criterion": An FP is assigned one and only one "theta-function." A given "theta-function" is associated with one and only one FP.

B. "Projection Principle": The "Extended Theta-criterion" holds at DS, SS, and LF. [Movement can only involve positions without "syntactic content" as landing sites.]

C. "Structural Extended Projection Principle: All IPs have subjects.

D. X can assign a theta-role "syntactically" to Y only if Y is an adjacent sister to X.

(5) Movement and bounding theory

A. An XP is BRIDGED if it is crossed (i.e. extracted out of) by using a dummy position [in the head or SPEC] of XP; crossed any other way, XP is SKIPPED.

B. [Only FPs can be bridged.]

C. IP can be bridged only if it is L-governed.

D. [A CFP can be bridged only if it is "L-marked."]
{An FP can be bridged only if "L-marked."}
{A C-P can be bridged only if "L-marked."}

E. An "argument trace" is either a trace in a source position that is assigned a theta-role, or a trace binding such a trace. An "adjunct trace" is either a trace in a position assigned a "modifier role" or a trace binding such a trace.

F. "DP-movement" is head-to-head movement; "wh-movement" is X-to-SPEC movement.

G. During any single application of "move alpha," one and only one LP can be crossed/skipped.

H. CFP-barriers to movement:

  I. "Standard English": No (argument) CFP can be skipped. (Skipping one such CFP is a "weak" violation.)

  II. An adjunct CFP is easier to skip than an argument CFP, at least in English.

  III. Italian, some Eng. dials., etc.: During the course of a given extraction, one and only one CFP can be skipped.

  IV. All languages "strongly" bar the skipping of two or more CFPs.

(6) Government theory

A. X M-commands Y iff every maximal projection which dominates X also dominates Y.

B. If Y is an adjunct, X governs Y iff X m-commands Y and there is no CFP which dominates Y and does not M-command X. "VOID" if the CFP is bridged.

C. X governs Y iff X m-commands Y and there is no LP which dominates Y and does not M-command X.

D. Revised ECP/definition of proper government : All nonpronominal empty categories must be antecedent-governed/proper government is antecedent-government.

(7) "L-marking"

A. "Wh-movement":

  I. For categories which are [+N] &/or [+V], L-marking may vary with respect to direct objects; other objects are invariably L-marked.

  II. Heads which are [-N, -V] invariably L-mark.

III. Variable L-marking assigns some "modality" feature to the SPEC of the direct object. If there is no lexicalized SPEC, a dummy SPEC is licensed.

B. "DP-movement":

I. ECM: V licenses a dummy head in CP; subject of IP moves to head of CP.

II. Raising: V or A licenses a dummy head in CP, and fails to assign a theta-role to the subject.

III. Passive: AxP fails to assign a theta-role to the subject.

6.2 Discussion

One of the most appealing aspects of this theory is the version of X-bar theory adopted, "free X-bar theory," which in its strongest form calls for endocentricity, binary branching, and progressive bar-numbering at all levels of representation and for all categories. The level of maximal projection is free, and it is unnecessary to decide whether one complement or modifier is an adjacent sister to another complement or modifier, with binary branching. As in the standard theory, subcategorization and theta-grid properties of individual lexical items account for the kinds of dependents which can or must appear in certain phrases. Since X-bar theory is free, none of these or other aspects of its application have to be stated. Rather, all that is required is the schema in (1A).

Adjunction is thus ruled out at all levels of representation, in the strong version of "free X-bar theory." If it should turn out, however, that there is independent evidence for adjunction at LF and/or PF,[1] the weaker, but restrictive, claim that X-bar theory is observed at the "core syntactic" levels of representation, i.e. S-structure as well as D-structure may still be plausibly maintained.

If it does turn out that adjunction is available at some levels of representation, it is clearly not enough to say that X-bar theory does not hold--rather, it must be determined which aspects of X-bar theory do not hold. For example, Barriers theory allows relaxation of the "progressive bar-numbering principle" at both D-structure and S-structure, but endocentricity is also not observed at S-structure. Why should this be? What aspects of X-bar theory, if any, hold in general, and if none do, what principles hold instead?

We have said that "free X-bar theory" does not provide for empty categories. In some sense, however, all that X-bar theory provides is "empty categories," i.e. empty syntactic positions open for lexical insertion. It seems that we have been assuming an auxiliary hypothesis concerning lexical insertion that all positions realized in a given X-bar structure will be "filled" with lexical items (including PRO). This principle seems entirely plausible, and it is restrictive in the sense that there is "usually" a one-to-one relation between positions in X-bar structures and lexical items inserted, cutting down the possibilities for "abstractness," i.e. restricting the distribution of dummy positions and traces, which must be "licensed" in some manner. Thus, we have proposed that "L-marking" assigns some feature of "modality," which must be assigned to head or SPEC, depending on the type of "L-marking."

If all empty positions must be "licensed" by some lexical head, it is impossible to account for many "final" landing sites. Contrast wh-movement in relatives versus that in matrix clauses. In the latter, the final position is not governed at all from the outside. Yet this position presumably is a licensed empty category at D-structure, just as are other landing sites for wh-movement. But what licenses it? This does not necessarily completely undermine the L-marking theory, but it does suggest that some empty categories are licensed in another way.

The additions to the theory of grammatical functions touched on here also presents some problems. We have discussed some of the problems of execution in viewing subjects as heads. Though we have claimed that "free X-bar theory" can provide for what appear to be phrases in the head of DP, this is the only case in which the canonical "subject" consistently appears as the same category as the subject itself. It has been argued here that the head of IP is "exocentric," but what about subjects of such categories as DegP? This is a significant problem, because it threatens the core claim of X-bar theory, that heads are of the same category as the phrases to which they project.

At the same time, we have also claimed that empty categories are not specified in terms of which particular level of X they represent--i.e. that an empty subject position can be realized as a D^n. It seems at least worth considering whether dummy positions can be "underspecified" in terms of categorial features, so that all phrases can tolerate DP subjects in their heads.

On the other hand, it is not at all clear that DP is the only category which can be a subject, nor is it clear that the same range of alternatives is possible for subjects of all (relevant) categories.

Here, we will focus on English, assuming that its possibilities can give us at least a good place to start in considering what might be possible in general. It seems possible to have DP, CP, DegP, and PP as subjects of IP (the latter two apparently being restricted to "copulative" and raising constructions, perhaps for interpretive reasons). The same range of categories for subjects seems impossible for other categories, such as DP, which cannot tolerate CP, DegP, or PP as a subject. If these are not idiosyncratic properties of English, it may be that DP does not tolerate certain categories as subjects because they would "clash" with the categorial features of the head position.

If it is true that "DP-movement" and "V-raising" are head-movement, differing somewhat in paths because such movement is sensitive to the categorial features of landing sites, it seems that we have some further support for seeing

X-bar as relevant to S-structure. Free X-bar theory, as we have so far perceived it, however, predicts that head-movement cannot use any landing site which does not "project" the same categorial features possessed by the X^{max} into which it has moved. Strictly speaking, DP should only tolerate DP subjects, for example, CP should tolerate only CP "subjects," and DegP should only allow DegP subjects. By our analysis, however, this does not appear to hold generally, though it holds for DP.

If clauses generally tolerate a broad range of categories as subjects, whereas other categories are much more restricted as to the types of categories they allow, a number of possibilities might be explored. For example, we might claim that IP and CP, as the [-N, -V, +F] categories, are "neutral" in some respects, which allows them to tolerate "true" dummy positions which are not specified for categorial features. Only "interpretability" would constrain the types of categories which could be "subjects" in these phrases. More work needs to be done in this area, if we are to continue to maintain that DP-movement is head-movement and that X-bar theory holds "freely" at both D-structure and S-structure.

The lexical/functional distinction has been discussed at some length in Chapter Three, and developed throughout this work, and we will not repeat the summary in (3). There are a number of issues which arise with "mixed" categories which make it necessary to ask which properties are more variable than others. We have claimed, for example, that lexical heads are subject to the Projection Principle, and yet we have allowed I, a lexical head, to be associated with dummy position subjects. If INFL is [+L] and yet it can tolerate dummy heads and SPEC, it seems that some property or properties of IP "override" this [+L] characteristic, but it remains to be seen how some properties hold generally of [+F] or [+L] but can be "overridden" in the presence of other features. Though we will not by any means be able to answer the questions which arise here in anything but a tentative way, it may be useful to attempt more explicitness in our description of the nature of IP and other categories which have somewhat peculiar properties in our system, particularly IP, PP, and AxP.

First, if it is true that IP is exocentric, the obligatoriness of the subject of IP, expressed in "GB-theory" as the "Extended Projection Principle," would simply follow from the obligatoriness of heads in general. We might be able to maintain, in addition, that IP must have a SPEC position, but in Chapter Five we claimed that empty SPECs in IP must be licensed by some L-governor, to explain why IPs in sentential subjects cannot be bridged. We illustrate this point by considering a construction such as (8) once more.

(8) what would $[_{IP*}$ $[_{CP}$ $[_{IP}$ PRO-to [t [read]]] be fun]

We could claim that IP* cannot be bridged because its SPEC is already filled with the "specific" subject CP. It would still be possible to bridge IP, however, if SPECs of IP are always predicted. Thus, the movement in (8) would skip CP and IP*, but IP would be bridged, and there would be no significant violation. It seems, then, that empty SPECs of IP must be licensed by some lexical head, i.e. that a structural "Extended Projection Principle" requiring the presence of SPEC in IP does not to work. The obligatoriness of subjects in clauses may have something to do with the peculiar nature of IP in general, but that in itself needs exploration.

The category IP is peculiar in that it acts as an LP-barrier, and yet its contents, unlike those of other LPs, are not strictly determined by the Projection Principle. It exhibits other properties of LPs, however, in its "descriptive content" (broadly speaking), its dependence on CP as "its FP," and INFL's ability to L-mark. There are basically two central properties of FPs which IP possesses, IP's ability to have SPEC, subject, and dummy positions, and its participation in the "filled-SPEC-if-specific" principle. Otherwise, IP does not behave as a CFP, since CP is apparently assigned relevant "syntactic content," etc.

Two other categories have rather unique properties, PP and Aux. Thus, we have claimed that PP is "lexical" ([+L]) in that it can have "descriptive content," it appears to be able to L-mark uniformly, and at least argument PPs appear as LP-barriers. It differs in that it is apparently not associated with some FP, and in that it may be bridgeable when L-marked. In these respects, PP behaves more as if it were a CFP; it receives syntactic content itself, and as a adjunct it appears to act as a CFP-barrier.

It should be noted that IP and PP do not exactly share and lack characteristics of "lexical properties" in the same way, but there may be some [+L] traits which are invariant.

The only categories which are [+F] but are not [+C] are Ax and I. AxP is the only category which appears to not be a barrier of any kind. Thus, if Ax can subcategorize for AxP in some structure in which movement occurs, and if at least intermediate landing sites must be licensed by L-marking, any number of AxPs seem to be skippable.

(9) $[_{AxP}\ t\ [_{AxP}\ [_{AxP}\ [_{VP}\ t\ ]]]]$

The theory of movement developed here attempts to account for the influence of L-marking on grammatical extraction, without simply claiming that L-marking licenses extraction. Thus, we have illustrated how L-marking is necessary but not always sufficient to license empty categories at D-structure which are then open for bridging, and how it is possible to extract from non-L-marked structures. Bridging, like adjunction in Barriers theory, can provide a method of directly voiding the effect of a barrier for a given movement, i.e. when a CFP is bridged. Like "escape hatches" in standard views of subjacency, and the use of the SPEC of CP as an intermediate landing site in Barriers theory, bridging can also "break up" what would have been the crossing of two barriers (LPs) together into two crossings of one barrier each.

The hypothesis that bridging and skipping are distinct addresses a number of problems encountered in theories of bounding. Consider the traditional subjacency analysis of (10).

(10) who $[_{S^*}$ did John say $[_{S'^*}$ t that he liked]]

If S' and S are both bounding nodes in English, (10) should be ungrammatical, since S'* and S* are crossed in the same movement. As it turns out, by the same analysis, the "marginal" structures in (11) would involve the crossing of three bounding nodes.

(11) TO WHOM $[_{S^*}$ did John wonder $[_{S'^*}$ what $[_{S}$ to give t T]]]

The distinction between skipping and bridging could alleviate the problem of wrongly predicted ungrammaticality in (10), though it could not reduce the severity of the violation in (11).

In our system the bridging/skipping distinction has a number of direct and indirect effects on bounding principles, a few of which we will illustrate again here. Taking the structure analogous to (11), the fact that IP is bridged and not skipped is crucial for movement of *to whom*; without this, three LPs (VP, IP, and VP*) would be skipped.

(12) TO WHOM did [$_{IP}$ John [$_{AxP}$ T [$_{VP*}$ wonder [$_{CP}$ what [$_{IP}$ T
PRO-to [$_{AxP}$ t [$_{VP}$ give t T]]]]]]]

It is not always necessary for IP to be bridged in general, but it is especially crucial in "marginal extractions," i.e. those situations in which the CP immediately dominating the IP must be skipped. Thus, in a fairly systematic fashion we are able to account for the indirect effects of "tensedness" on *wh*-extraction.

As we have seen, the ability to bridge a CFP sometimes makes it possible to avoid skipping two LPs at once.

(13) a. who did John [$_{VP}$ say [$_{CP}$ t that [$_{IP}$ he liked t]]]

b. who was John [$_{VP}$ reading [$_{DP}$ t a [$_{NP}$ book about t]]]

To these we add the subject extraction phenomena from Rizzi (1978, 1982), discussed in Chapter Three, now changed in view of the hypothesis, adopted in Chapter Five, that IP is an LP-barrier.

(14) a. Gianni, of whom I [$_{VP}$ know [$_{CP}$ t that [$_{IP}$ [$_{DP}$ a
picture t] appeared ...]]]

b. *Gianni, of whom I [$_{VP}$ know [$_{CP}$ in which paper
[$_{IP}$ [$_{DP}$ a picture t] appeared ...]]]

The CP in these structures must be bridged to prevent the skipping of two LPs (IP and VP) at once, regardless of the status of the CFP-barriers.

The same analysis, however, leads us to retain the condition against skipping more than one CFP in structures such as (15).

(15) *the book, which [I [t [know [$_{CP*}$ to whom [
[t you [t believe [$_{CP}$ t* that [t I
[t [dedicated t_1 t_2]]]]]]]]]]]

Two CPs will be skipped in this extraction, by either of the analyses possible--whether CP* and CP are skipped moving the same element or not. Whatever the status of t*, the other movement will have to skip CP, and movement of which skips CP*. An analysis of the paths of movement in (15) is underdetermined to some degree, since different choices give the same results as far as the number of LP- and CFP-barriers skipped is concerned. Thus (15), unlike (14), seems to not be reducible to principles of "LP-bounding."

Similarly, (16) is grammatical as far as LP-bounding is concerned. Though IP is an LP-barrier (we claim), being able to bridge it voids its effect for nonfinite clauses.

Two CFPs are skipped, however, indicating again that we need principles of "CFP-barrierhood."

(16) who did [t you [t [believe [$_{CP*}$ who T [t T to
[t have [said [$_{CP}$ who T [t T to [t have
[seen t]]]]]]]]]]]

In Chapter Three, we briefly discussed the problems concerning how the principles of CFP-barrierhood apply. Bridging voids CFP-barrierhood, but two CFPs skippped anywhere in the construction produce a strong violation. This suggests, as we pointed out earlier, that the principles we developed first in terms of "CFP-bounding" might well involve conditions on S-structure representation. Suppose, for example, that some feature marks any node which is skipped. At S-structure, the condition (17) might apply.

(17) No more than one CFP can be skipped (i.e. marked which the feature [+S]).

In languages which permit not even one CFP to be skipped, CFPs may be relevant to movement itself, but since only one CFP is skipped at a time, violations are never severe. The condition in (17), however, should account for why (15) and (16) are strongly ungrammatical in both Italian (Rizzi, 1982) and English.

The feature [+S] may be relevant at LF for the ECP. Thus, we noted in Chapter Three that CFPs apparently block governmnet of adjunct traces they dominate, as long as those

CFPs are skipped. We can then revise the hypothesis concerning barriers to government of adjuncts (6B) to (18).

(18) If Y is an adjunct, X governs Y iff X m-commands Y and there is no CFP marked with [+S] which dominates Y and does not M-command X.

Since bridged CFPs are not marked [+S], they are irrelevant to (18). Though this "feature" in some sense merely serves as a convenient "diacritic," it does not seem totally implausible that movement leaves other vestiges besides traces. That is, if the bridging/skipping distinction can continue to be independently motivated, the feature [+S] may not be arbitrary. To my knowledge, there is nothing particularly more preferable about deleting nodes, as we unsuccessfully attempted in Chapter Three. As we saw, that analysis created problems for the notion that LPs are barriers to government in the way described, problems which do not arise with the marking of the feature [+S]. If it should turn out that LPs are not barriers to government, however, there appear to be no strong arguments against deleting nodes which are bridged. As we can see, this problem deserves more attention.

It seems that there is really no need to provide a condition on bridging itself, i.e. that a CFP/CLP must be L-marked to be bridgeable. Rather, (5D) should follow from a number of interacting principles, concerning X-bar theory, the lexical/functional distinction (part of the theory of syntactic categories), theta-theory, and "proper movement."

The theory of movement interacts with the lexical/functional distinction in a number of ways. Theta-theory helps to determine which categroies can be bridged because it helps to license empty categories, and theta-theory applies somewhat differently, we have proposed, in LPs and FPs, affecting where such dummy positions can occur. The core barriers for bounding are purportedly LPs, whereas FPs behave quite differently, offering "escape" from barriers. As we mentioned in Chapter Three, this view of movement linked to the presence of FP really suggests that long-distance movement, at least, i.e. what many refer to as "overt movement at S-structure," may be lacking in some languages at the same time that a "full" ("rich") system of syntactic functional categories is absent.

An area in which our theory has been only partially successful concerns the major goal of Barriers theory and related work--unification of the bounding and government principles through some concept of "barrier" common to both subsystems of principles. First, we have no one, unified notion of "barrier," but rather two types of barriers, based on properties central to the lexical/functional distinction.

Second, we have had to be cautious in making relevant to the theory of government the barriers we perceived to be relevant to movement. The CFP-barriers only block government of adjuncts, only when the CFP is bridged. LP-barriers, should be relevant to both arguments and adjuncts, if any of the arguments involving Case assignment hold.

However, proper antecedent-government seems to largely follow from proper movement. For example, the SPEC of AxP is needed both to avoid skipping VP and IP at once and to ensure proper antecedent-government in spite of the VP barrier.

We have proposed that an LP-barrier is relevant only for potential governors which the barrier does not M-command. However, we have continued to encounter problems with "marginal" wh-island extraction.

(19) TO WHOM did $[_{IP^*}$ John $[_{AxP}$ T" $[_{VP^*}$ wonder $[_{CP}$ what
$[_{IP}$ T' to $[_{AxP}$ t' $[_{VP}$ give t T]]]]]]]

The problem with (19) is that T' is not M-commanded by VP, an LP-barrier dominating T. Antecedent-government should be blocked. Further, IP in (19) is an LP-barrier dominating T' which does not M-command T". The latter problem could be avoided because of IP's lack of a [+S] feature, if [+S] is relevant for LP-barriers as well as CFP-barriers. The former problem, however, suggests that the "command" concept used in our definition of government might be in need of adjustment.

(20) X L-M-commands Y if every [+L] maximal projection which dominates X also dominates Y.

(21) X governs Y iff:
(a) X (m)-commands Y and
(b) there is not barrier dominating Y which does not L-M-command X.

Thus, in (19) VP L-M-commands T'; the same lexical maximal projections which dominate VP also dominate T' (assuming, as we have throughout, that a node does not dominate itself). A question which now arises is whether the concept of L-M-command might be relevant in (21a) as well as (21b). It remains to be seen in general what notion of command not only gives the right results with the problematical structures encountered but which is relevant in defining various principles.

The fundamental problem with the unification of theories of government and movement through LP-barrierhood, however, is redundancy. If two LPs are skipped, at least the lower LP will be an effective barrier to government as well. Since the schema for phrase structure works basically as illustrated in (22), any LP barrier relevant to government will also have to be a barrier involved in a bounding violation.

(22) $[_{FP}\ X\ [_{LP}\ [_{FP}\ t'\ [_{LP}\ [_{FP^*}\ (t)\ [_{LP}\ t\ ]]]]]]$

The only real motivation we have found so far for LP-barrierhood to government involves Case assignment. Thus, we have claimed that IP is a barrier to government of the overt subject in (23), so that the matrix verb cannot assign it Case.

(23) John $[_{VP}$ tried $[_{CP}$ e $[_{IP}$ e PRO-to be honest $]]]$

The same lexical maximal projetions which dominate IP also dominate *tried*, however. It seems then, that M-command works better here, since IP does not M-command *tried*. This returns us, of course, to the problem of proper government in ( ), now once again unresolved. Alternatively, we could consider the hypothesis that PRO is governed after all, its distribution determined by the "specificness principle." If PRO can be governed, however, there remains the problem of why (24) cannot be grammatical.

(24) John believes PRO to be good

There are essentially two structures to rule out here, (25) and (26).

(25) John believes $[_{CP}$ PRO $[_{IP}$ e-to be good $]]$

(26) John believes $[_{CP}$ e $[_{IP}$ PRO-to be good $]]$

If PRO must be ungoverned, (25) can be ruled out, since no barrier blocks government of PRO in CP. The apparent impossibility of (26), however, is more difficult to explain, since it presumably has the same structure as (27).

(27) John tries $[_{CP}$ e $[_{IP}$ PRO-to be honest $]]$

It seems that the only difference between (26) and (27) is that the CP in (26) is "L-marked" for a "true" dummy C head which (27) somehow lacks.

Finally, notice that our bounding theory redundantly rules out the DP-movements in (28) and (29), which are presumably already barred by binding theory.

(28) John [[$_{VP}$ seems [that [$_{IP}$ t likes football]]]]

(29) John [[$_{VP}$ seems [that [$_{IP}$ Mary [[$_{VP}$ likes t]]]]]]

Clearly, there are many issues to rethink if it is true that X-bar theory is freely generalized to all categories and if certain positions provided by this generalization provide the "escape hatches" for movement. We have concentrated primarily on developing a theory of barriers to movement, and made some attempts to relate it to the theory of government. Though we have been able to capture the core cases in which antecedent-government of adjuncts has been thought to be blocked, following Lasnik and Saito's work, a number of questions which arise indicate that in the theory here developed it cannot be claimed without qualification that barriers to movement are barriers to government. As we have tried to show, it seems plausible in view of the lexical/nonlexical distinction that there are different kinds of "barriers," which have effects on movement in distinct ways, and which may also influence government differently.

APPENDIX A
BRIDGE VERBS TAKING INFINITIVE "OR" GERUNDIVE COMPLEMENTATION

gerund	either	infinitive
REPORTING FACTS report mention admit reennact describe explain deny dispute question forget	portray remember recall note	CLAIMS TO FACTHOOD* know realize assume take think believe understand claim profess seem appear tend
RECOGNITION celebrate appreciate applaud mourn regret mock	recognize acknowledge judge view	
ENTERTAINING IDEAS contemplate investigate discuss debate overlook ignore	consider imagine picture	DECIDING, PREPARING, AGREEING elect prepare get ready mean intend plan arrange hesitate decline decide consent agree
FAVORING OR OPPOSING favor promote advocate support defend oppose protest blame reject condemn	propose choose prefer would like	
EMOTIONAL RESPONSES anticipate dread respect prize treasure enjoy crave envy despise dislike detest mind resent can't stand	like love hate	EXPECTATION, DESIRES expect hope aspire trust want desire wish long yearn

TRYING TO CAUSE INDIRECTLY

suggest
recommend
hinder

encourage
advise

TRYING TO CAUSE DIRECTLY

warn
caution
urge
implore
invite
call
remind

ask
request
beg
petition
dare

clamor
demand

CAUSING (or not)

elicit
revive
restore

stimulate
prevent
eradicate

prompt
inspire
provoke
cause
incite

move
compel
persuade
coerce
convince

lead
drive
stir
incline
force

MAKING NECESSARY OR POSSIBLE

dictate
necessitate
prohibit
bar
ban
abolish
sanction
legalize
approve

allow
permit
authorize
license
forbid
require

order
command
direct
tell
instruct
motion
signal

condemn
leave

appoint
assign
hire
obligate

JUSTIFICATION

legitimize
justify
merit
warrant
be worth

deserve
afford
need

EXPERIENCING, FACING

confront
face
tackle
take on
brave
risk
hazard
chance

experience
undergo
weather
stand
tolerate
withstand
bear
survive

handle

undertake
try
attempt
venture
work

manage

GOING AFTER

endeavor
make efforts
strive
strain
take steps
struggle
fight
push

happen
chance

rush
hurry
scramble

NOT FACING, etc.

avoid
escape
dodge
shun
forego

postpone
delay
set aside
ignore
omit

neglect

fail
forget

STOPPING (AND COMMITTED STARTING)

stop
finish
quit
conclude

cancel
call off
give up
relinquish
abandon

start
begin

CONTINUING

keep
resume

practice
rehearse

continue

MASTERY

master
achieve

LEARNING

enable
teach
train

equip
raise

learn
know

*Examples:

1. he mentioned going there
remembered

2. he took her to be honest
remembered

3. he claimed to be honest

APPENDIX B
INTERACTION OF FEATURE SYSTEM AND REDUNDANCY RULES

		N	V	C	L	F	
1.	*	+	+	+	+	+	(61a)
2.	*	+	+	+	+	−	(63)
3.	Deg	+	+	+	−	+	
4.	*	+	+	+	−	−	(60), (63)
5.	*	+	+	−	+	+	(61a)
6.	AP	+	+	−	+	−	
7.	*	+	+	−	−	+	(62b)
8.	*	+	+	−	−	−	(60)
9.	*	+	−	+	+	+	(61a)
10.	*	+	−	+	+	−	(63)
11.	DP	+	−	+	−	+	
12.	*	+	−	+	−	−	(60)
13.	*	+	−	−	+	+	(61a)
14.	NP	+	−	−	+	−	
15.	*	+	−	−	−	+	(62b)
16.	*	+	−	−	−	−	(60)
17.	*	−	+	+	+	+	(61a)
18.	*	−	+	+	+	−	(63)
19.	*	−	+	+	−	+	(62a)
20.	*	−	+	+	−	−	(60)
21.	*	−	+	−	+	+	(61a)
22.	VP	−	+	−	+	−	
23.	AxP	−	+	−	−	+	
24.	*	−	+	−	−	−	(60)
25.	*	−	−	+	+	+	(61a)
26.	PP	−	−	+	+	−	
27.	CP	−	−	+	−	+	
28.	*	−	−	+	−	−	(60)
29.	IP	−	−	−	+	+	
30.	*	−	−	−	+	−	(61b)
31.	*	−	−	−	−	+	(61b)
32.	*	−	−	−	−	−	(60)

(60) a. If [-L], then [+F]
b. If [-F], then [+L]

(61) a. If [+L, +F], then [-N, -V, -C]
b. If [-N, -V, -C], then [+L, +F]

(62) a. If [+V, -N, +F], then [-C]
b. Otherwise, if [+F], then [+C]

(63) If [+C, -F], then [-N, -V]

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